EIGHTEENTH ANNUAL REPORT

OF THE

Illinois State Bee-Keepers' Association

Organized February 26, 1891, at
Springfield, Illinois

Compiled by
JAMES A. STONE, Secretary
Farmingdale, Illinois

[Printed by authority of the State of Illinois.]

SPRINGFIELD, ILL.
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LETTER OF TRANSMITTAL.

OFFICE OF THE SECRETARY,
R. R. 4, SPRINGFIELD, ILLINOIS, *April 1, 1919.*

To His Excellency Frank O. Lowden, Governor of the State of Illinois.

SIR: I have the honor to transmit herewith the Eighteenth Annual Report of the Illinois State Bee-Keepers' Association.

Respectfully submitted,
JAMES A. STONE, *Secretary.*

FATHER LANGSTROTH,

Inventor of the Movable Frame Hive.

OFFICERS OF THE ILLINOIS STATE BEE-KEEPERS' ASSOCIATION FOR 1919.

DR. A. C. BAXTER . . . . . President
Springfield.

A. L. KILDOW . . . . . Putnam
State Inspector of Apiaries.

VICE PRESIDENTS.

1ST A. O. HEINZEL . . . . . R. 3, Lincoln
2D G. M. WITHROW . . . . . Mechanicsburg
3D AARON COPPIN . . . . . Wenona
4TH HARRY L. KING . . . . . Springfield
5TH S. A. TYLER . . . . . Emden
JAMES A. STONE . . . . . Secretary
GEO. SEASTREAM . . . . . Treasurer
Pawnee.

List of members will appear in back of Report. Also Statistical Report and Index.


ILLINOIS STATE BEEKEEPERS ASSOCIATION
1871

FORMATION OF THE ILLINOIS STATE BEE-KEEPERS ASSOCIATION.

SPRINGFIELD, ILL., *February 26, 1891.*

The Capitol Bee-Keepers' Association was called to order by President P. J. England.

Previous notice having been given that an effort would be made to form a State Association, and there being present bee-keepers from different parts of the State, by motion, a recess was taken in order to form such an Association.

P. J. England was chosen temporary chairman and C. E. Yocum temporary secretary. On motion, the Chair appointed Thos. G. Newman, C. P. Dadant and Hon. J. M. Hambaugh a Committee on Constitution.

Col. Chas. F. Mills addressed the meeting on the needs of a State Association and stated that it was his opinion that the bee-keepers should have a liberal appropriation for a State Apiarian Exhibit at the World's Columbian Exposition.

A motion to adjourn till 1:30 p. m. prevailed.

AFTERNOON SESSION.

The Committee on Constitution reported a form for same which, on motion, was read by the Secretary, by sections serially.

Geo. F. Robbins moved to substitute the word "shall" for "may" in the last clause of Section 1, Article III. This led to a very animated discussion, and the motion was lost.

J. A. Stone moved to amend the above-named section by striking out the word "ladies" and all that followed of the same section, which motion led to further discussion, and motion finally prevailed.

Section 2, Article II, relating to a quroum, was, on motion, entirely stricken out.

Mr. Robbins moved to amend Article V by adding the words "Thirty days' notice having been given to each member." Prevailed.

Thos. G. Newman moved to adopt the Constitution, so amended, as a whole. Which motion prevailed.

See Constitution.

J. A. Stone moved that the Chair appoint a Nominating Committee of three on permanent organization. Prevailed.

Chair appointed as such committee, Col. Chas. F. Mills, Hon. J. M. Hambaugh, and C. P. Dadant.

Committee retired and in a few minutes returned, submitting the following named persons as candidates for their respective offices:

For President—P. J. England, Fancy Prairie.

For Vice Presidents—Mrs. L. Harrison, Peoria; C. P. Dadant, Hamilton; W. T. F. Petty, Pittsfield; Hon. J. M. Hambaugh, Spring; Dr. C. C. Miller, Marengo.

Secretary—Jas. A. Stone, Bradfordton.

Treasurer—A. N. Draper, Upper Alton.

Mr. Black moved the adoption of the report of the Committee on Nominations. The motion prevailed, and the officers as named by the committee were declared elected for the ensuing year.

Hon. J. M. Hambaugh moved that Mr. Thos. G. Newman, editor American Bee Journal, of Chicago, be made the first honorary member of the Association. Prevailed.

At this point Col. Chas. F. Mills said:

"Mr. Chairman, I want to be the first one to pay my dollar for membership," at the same time suiting his action to his words, and others followed his example, as follows:

CHARTER MEMBERS.

Col. Chas. F. Mills, Springfield.
Hon. J. M. Hambaugh, Spring.
Hon. J. S. Lyman, Farmingdale.
C. P. Dadant, Hamilton.
Chas. Dadant, Hamilton.
A. N. Draper, Upper Alton.
S. N. Black, Clayton.
Aaron Coppin, Wenona.
Geo. F. Robbins, Mechanicsburg.
J. W. Yocum, Williamsville.
Thos. S. Wallace, Clayton.
A. J. England, Fancy Prairie.
P. J. England, Fancy Prairie.
C. E. Yocom, Sherman.
Jas. A. Stone, Bradfordton.

FIRST HONORARY MEMBER.

Thos. G. Newman, editor American Bee Journal, Chicago.

STATE OF ILLINOIS—DEPARTMENT OF STATE.

ISAAC N. PEARSON, *Secretary of State.*

To all to whom these Presents shall come—GREETING:

Whereas, A certificate duly signed and acknowledged having been filed in the office of the Secretary of State on the 27th day of February, A. D. 1891, for the organization of the Illinois State Bee-Keepers' Association, under and in accordance with the provisions of "An Act Concerning Corporations," approved April 18, 1872, and in force July 1, 1872, and all acts amendatory thereof, a copy of which certificate is hereunto attached.

Now, Therefore, I, Isaac N. Pearson, Secretary of State, of the State of Illinois, by virtue of the powers and duties vested in me by law, do hereby certify that the said, The Illinois State Bee-Keepers' Association, is a legally organized corporation under the laws of the State.

In Testimony Whereof, I hereunto set my hand and cause to be affixed the great seal of State.

Done at the city of Springfield, this 27th day of February, in the year of our Lord one thousand eight hundred and ninety one, and the Independence of the United
(Seal) States the one hundred and fifteenth.

I. N. PEARSON, *Secretary of State.*

STATE OF ILLINOIS, } ss.
County of Sangamon, }

To Isaac N. Pearson, Secretary of State:

We, the undersigned, Perry J. England, Jas. A. Stone and Albert N. Draper, citizens of the United States, propose to form a corporation under an act of the General Assembly of the State of Illinois, entitled "An Act Concerning Corporations," approved April 18, 1872, and all acts amendatory thereof; and for the purposes of such organizations, we hereby state as follows, to-wit:

1. The name of such corporation is, The Illinois State Bee-Keepers' Association.
2. The object for which it is formed is to promote the general interests of the pursuit of bee-culture.
3. The management of the aforesaid Association shall be vested in a board of three Directors, who are to be elected annually.
4. The following persons are hereby selected as the Directors, to control and manage said corporation for the first year of its corporate existence, viz: Perry J. England, Jas. A. Stone, and Albert N. Draper.
5. The location is in Springfield, in the county of Sangamon, State ofIllinois.

(Signed) PERRY J. ENGLAND.
JAS. A. STONE.
ALBERT N. DRAPER.

STATE OF ILLINOIS, } ss.
Sangamon County. }

I. S. Mendenhall, a notary public in and for the county and State aforesaid, do hereby certify that on this 26th day of February, A. D. 1891, personally appeared before me, Perry J. England, James A. Stone and Albert N. Draper, to me personally known to be the same persons who executed the foregoing certificate, and severally acknowledged that they had executed the same for the purposes therein set forth.

In witness whereof, I have hereunto set my hand and seal the day and year above written.

[Seal] S. MENDENHALL, *Notary Public.*

CONSTITUTION AND BY-LAWS OF THE ILLINOIS STATE BEE-KEEPERS' ASSOCIATION.

Constitution.

Adopted Feb. 26, 1891.

ARTICLE I.—NAME.

This organization shall be known as The Illinois State Bee-Keepers' Association, and its principal place of business shall be at Springfield, Ill.

ARTICLE II.—OBJECT.

Its object shall be to promote the general interests of the pursuit of bee-culture.

ARTICLE III.—MEMBERSHIP.

Section 1. Any person interested in Apiculture may become a member upon the payment to the Secretary of an annual fee of one dollar ($1). (Amendment adopted at annual meeting, November, 1905): And any affiliating Association, as a body, may become members on the payment of an aggregate fee of fifty cents (50c) per member, as amanded November, 1910.

Sec. 2. Any persons may become honorary members by receiving a majority vote at any regular meeting.

ARTICLE IV.—OFFICERS.

Section 1. The officers of this Association shall be, President, Vice President, Secretary and Treasurer. Their terms of office shall be for one year, or until their successors are elected and qualified.

Sec. 2. The President, Secretary and Treasurer shall constitute the Executive Committee.

Sec. 3. Vacancies in office—by death, resignation and otherwise—shall be filled by the Executive Committee until the next annual meeting.

ARTICLE V.—AMENDMENTS.

This Constitution shall be amended at any annual meeting by a two-thirds vote of all the members present—thirty days' notice having been given to each member of the Association.

By-Laws.

ARTICLE I.

The officers of the Association shall be elected by ballot and by a majority vote.

ARTICLE II.

It shall be the duty of the President to call and preserve order at all meetings of this Association; to call for all reports of officers and committees; to put to vote all motions regularly seconded; to count the vote at all elections, and declare the results; to decide upon all questions of order, and to deliver an address at each annual meeting.

ARTICLE III.

The Vice Presidents shall be numbered, respectively, First, Second, Third, Fourth and Fifth, and it shall be the duty of one of them, in his respective order, to preside in the absence of the President.

ARTICLE IV.

Section 1. It shall be the duty of the Secretary to report all proceedings of the Association, and to record the same, when approved, in the Secretary's book; to conduct all correspondence of the Association, and to file and preserve all papers belonging to the same; to receive the annual dues and pay them over to the Treasurer, taking his receipt for the same; to take and record the name and address of every member of the Association; to cause the Constitution and By-Laws to be printed in appropriate form. and in such quantities as may be directed by the Executive Committee from time to time, and see that each member is provided with a copy thereof; to make out and publish annually, as far as practicable, statistical table showing the number of colonies owned in the spring and fall, and the amount of honey and wax produced by each member, together with such other information as may be deemed important, or be directed by the Executive Committee; and to give notice of all meetings of the Association in the leading papers of the State, and in the bee journals at least four weeks prior to the time of such meeting.

Sec. 2. The Secretary shall be allowed a reasonable compensation for his services, and to appoint an assistant Secretary if deemed necessary.

ARTICLE V.

It shall be the duty of the Treasurer to take charge of all funds of the Association, and to pay them out upon the order of the Executive Committee, taking a receipt for the same; and to render a report of all receipts and expenditures at each annual meeting.

ARTICLE VI.

It shall be the duty of the Executive Committee to select subjects for discussion and appoint members to deliver addrsses or read essays, and to transact all interim business.

ARTICLE VII.

The meeting of the Association shall be, as far as practicable, governed by the following order of business:

Call to order.
Reading minutes of last meeting.
President's address.
Secretary's report.
Treasurer's report.
Reports of committees.
Unfinished business.
Reception of members and collection.
Miscellaneous business.
Election and installation of officers.
Discussion.
Adjournment.

ARTICLE VIII.

These By-Laws may be amended by a two-thirds vote of all the members present at any annual meeting.

C. E. YOCOM.
AARON COPPIN.
GEO. F. ROBBINS.

Following is a copy of the law passed by the Illinois Legislature May 19, and signed by the Governor June 7, 1911, to take effect July 1, 1911:

STATE FOUL BROOD LAW.

State Inspector of Apiaries.

Preamble.

§ 1. State Inspector of Apiaries—appointment—term—assistants—per diem.

§ 2. Foul Brood, Etc.—what declared nuisances—inspection—notice to owner or occupant—treatment—abatement of nuisance—appeal.

§ 3. Annual Report.

§ 4. Penalties.

House Bill No. 670.

(Approved June 7, 1911.)

AN ACT *to prevent the introduction and spread in Illinois of foul brood among bees, providing for the appointment of a State Inspector of Apiaries and prescribing his powers and duties.*

Whereas, the disease known as foul brood exists to a very considerable extent in various portions of this State, which, if left to itself, will soon exterminate the honey-bees; and

Whereas, the work done by an individual bee-keeper or by a State inspector is useless so long as the official is not given authority to inspect and, if need be, to destroy the disease when found; and

Whereas, there is a great loss to the bee-keepers and fruit growers of the State each year by the devastating ravages of foul brood;

Section 1. *Be it enacted by the People of the State of Illinois, represented in the General Assembly:* That the Governor shall appoint a State inspector of Apiaries, who shall hold his office for the term of two years, and until his successor is appointed and qualified, and who may appoint one or more assistants, as needed, to carry on the inspection under his supervision. The Inspector of Apiaries shall receive for each day actually and necessarily spent in the performance of his duties the sum of four dollars to be paid upon bills of particulars certified to as correct by the said State Inspector of Apiaries, and approved by the Governor.

Sec. 2. It shall be the duty of every person maintaining or keeping any colony or colonies of bees to keep the same free from the disease known as foul brood and from every contagious and infectious disease among bees. All bee-hives, bee-fixtures or appurtenances where foul brood or other contagious or infectious diseases among bees exists, are hereby declared to be nuisances to be abated as hereinafter prescribed. If the inspector of apiaries shall have reason to believe that any apiary is infected by foul brood or other contagious disease, he shall have power to inspect, or cause to be inspected, from time to time, such apiary, and for the purpose of such inspection he, or his assistants, are authorized during reasonable buisness hours to enter into or upon any farm or premises, or other building or place used for the purpose of propagating or nurturing bees. If said inspector of apiaries, or his assistants, shall find by inspection that any person, firm or corporation is maintaining a nuisance as described in this section, he shall notify in writing the owner or occupant of the premises containing the nuisance so disclosed of the fact that such nuisance exists. He shall include in such notice a statement of the conditions constituting such nuisance, and order that the same be abated within a specified time and a direction, written or printed, pointing out the methods which

shall be taken to abate the same. Such notice and order may be served personally or by depositing the same in the post office properly stamped, addressed to the owner or occupant of the land or premises upon which such nuisance exists, and the direction for treatment may consist of a printed circular, bulletin or report of the Inspector of Apiaries, or an extract from same.

If the person so notified shall refuse or fail to abate said nuisance in the manner and in the time prescribed in said notice, the Inspector of Apiaries may cause such nuisance to be abated; and he shall certify to the owner or person in charge of the premises the cost of the abatement and if not paid to him within sixty days thereafter the same may be recovered, together with the costs of action, before any court in the State having competent jurisdiction.

In case notice and order served as aforesaid shall direct that any bees, hives, bee-fixtures or appurtenances shall be destroyed and the owner of such bees, hives, bee-fixtures or appurtenances shall consider himself aggrieved by said order, he shall have the privilege of appealing within three days of the receipt of the notice to the County Court of the county in which such property is situated. The appeal shall be made in like manner as appeals are taken to the County Court from judgments of justices of the peace. Written notice of said appeal served by mail upon the Inspector of Apiaries shall operate to stay all proceedings until the decision of the county court, which may, after investigating the matter, reverse, modify or affirm the order of the Inspector of Apiaries. Such decision shall then become the order of the Inspector of Apiaries, who shall serve the same as hereinbefore set forth and shall fix a time within which such decision must be carried out.

Sec. 3. The Inspector of Apiaries shall, on or before the second Monday in December of each calendar year, make a report to the Governor and also to the Illinois State Bee-Keepers' Association, stating the number of apiaries visited, the number of those diseased and treated, the number of colonies of bees destroyed and the expense incurred in the performance of his duties.

Sec. 4. Any owner of a diseased apiary or appliances taken therefrom, who shall sell, barter or give away any such apiary, appliance, queens or bees from such apiary, expose other bees to the danger of contracting such disease, or refuse to allow the Inspector of Apiaries to inspect such apiary, or appliances, shall be fined not less than $50 nor more than $100.

Approved June 7, 1911.

(Bill passed in the 50th General Assembly.

BEE-KEEPERS' ASSOCIATION.

THE ORIGINAL BILL.

§ 1. Appropriates $1,000 per annum—proviso.
§ 2. How drawn.
§ 3. Annual Report.

AN ACT *making an appropriation for the Illinois State Bee-Keepers' Association.*

Whereas, The members of the Illinois State Bee-Keepers' Association have for years given much time and labor without compensation in the endeavor to promote the interests of the bee-keepers of the State; and,

Whereas, The importance of the industry to the farmers and fruit-growers of the State warrants the expenditure of a reasonable sum for the holding of annual meetings, the publication of reports and papers containing practical information concerning bee-keeping, therefore, to sustain the same and enable this organization to defray the expenses of annual meetings, publishing reports, suppressing foul brood among bees in the State, and promote the industry in Illinois;

Section 1. *Be it enacted by the People of the State of Illinois represented in the General Assembly*: That there be and is hereby appropriated for the use of the Illinois State Bee-Keepers' Association the sum of one thousand dollars ($1,000) per annum for the years 1917, 1918. For the purpose of advancing the growth and developing the interests of the bee-keepers of Illinois, said sum to be expended under the direction of the Illinois State Bee-Keepers' Association for the purpose of paying the expenses of holding annual meetings, publishing the proceedings of said meetings suppressing foul brood among bees in Illinois, etc.

Provided, however, That no officer or officers of the Illinois State Bee-Keepers' Association shall be entitled to received any money compensation whatever for any services rendered for the same, out of this fund.

Sec. 2. That on the order of the President, countersigned by the Secretary of the Illinois State Bee-Keepers' Association, and approved by the Governor, the Auditor of Public Accounts shall draw his warrant on the Treasurer of the State of Illinois in favor of the treasurer of the Illinois State Bee-Keepers' Association for the sum herein appropriated.

Sec. 3. It shall be the duty of the treasurer of the Illinois State Bee-Keepers' Association to pay out of said appropriation, on itemized and receipted vouchers, such sums as may be authorized by vote of said organization on the order of the President countersigned by the Secretary, and make annual report to the Governor of all such expenditures, as provided by law.

Itemized in the Omnibus Bill as follows:

For Shorthand Reporting	$ 200.00
For Postage and Stationery	50.00
For Printing	550.00
Expense of Meetings	200.00
Total Amount of the Appropriation	$1,000.00

The Assembly ruled that this is not to be paid in *lump* but drawn on itemized accounts.

CODE OF RULES AND STANDARDS FOR GRADING APIARIAN EXHIBITS AT FAIR AS ADOPTED BY ILLINOIS STATE BEE-KEEPERS' ASSOCIATION.

COMB HONEY.

Rule 1. Comb honey shall be marked on a scale of 100. as follows:

Quantity	40	Style of display	20
Quality	40		

Rule 2. Points of quality should be:

Variety	5	Straightness of comb	5
Clearness of capping	10	Uniformity	5
Completeness of capping	5	Style of section	5
Completeness of filling	5		

Remarks: 1. By variety is meant different kinds, with regard to the sources from which the honey is gathered, which adds much interest to an exhibit.

2. By clearness of capping is meant freedom from travel stain and a water soaked appearance. This point is marked a little high, because it is a most important one. There is no better test of the quality of comb honey than the appearance of the cappings. If honey is taken off at the proper time, and cared for as it should be, so as to preserve its original clear color, body and flavor will take care of themselves, for excellence in the last two points always accompanies excellence in the first. Clover and basswood honey should be white; heartsease, a dull white tinged with yellow; and Spanish needle, a bright yellow.

3. By uniformity is meant closeness of resemblance in the sections composing the exhibit.

4. By style is meant neatness of the sections freedom from propolis, etc.

5. Honey so arranged as to show every section should score the highest in style of display, and everything that may add to the tastiness and attractiveness of an exhibit should be considered.

EXTRACTED HONEY.

Rule 1. Extracted honey should be marked on a scale of 100, as follows:

Quantity	40	Style of display	15
Quality	45		

Rule 2. The points of quality should be:

Variety	10	Style of package	10
Clearness of color	5	Variety of package	5
Body	5	Finish	5
Flavor	5		

Remarks: 1. Light clover honey pouring out of a vessel is a very light straw color; Spanish needle, a golden hue, and dark clover honey, a dull amber.

2. Style of package is rated a little high, not only because in that consists the principal beauty of an exhibit of extracted honey, but also because it involves the best package for marketing. We want to show honey in the best shape for the retail trade, and that, in this case, means the most attractive style for exhibition. Glass packages should be given the preference over tin; flint glass over green, and smaller vessels over larger, provided the latter run over one or two pounds.

3. By variety of package is meant chiefly different sizes; but small pails for retailing, and, in addition, cans or kegs (not too large) for wholesaling, may be considered. In the former case, pails painted in assorted colors, and lettered "Pure Honey," should be given the preference.

4. By finish is meant capping, labeling, etc.

5. Less depends upon the manner of arranging an exhibit of extracted than of comb honey, and for that reason, as well as to give a higher number of points to style of package, a smaller scale is allowed for style of display.

SAMPLES OF COMB AND EXTRACTED HONEY.

Rule 1. Single cases of comb honey, entered as such for separate premiums, should be judged by substantially the same rules as those given for a display of comb honey, and samples of extracted, by those governing displays of extracted honey.

Rule 2. Samples of comb or extracted honey, as above, may be considered as part of the general display in their respective departments.

GRANULATED HONEY.

Rule 1. Candied or granulated honey should be judged by the rules for extracted honey, except as below.

Rule 2. The points of quality should be:

Variety	10	Style of package	10
Fineness of grain	5	Variety of package	5
Color	5	Finish	5
Flavor	5		

Rule 3. An exhibit of granulated honey may be entered or considered as part of a display of extracted honey.

NUCLEI OF BEES.

Rule. Bees in observation hives should be marked on a scale of 100, as follows:

Color and markings	30	Quietness	5
Size of bees	30	Style of comb	5
Brood	10	Style of hive	10
Queen	10		

Remarks: 1. Bees should be exhibited only in the form of single frame nuclei. in hives or cages with glass sides.

2. Italian bees should show three or more bands, ranging from leather color to golden or light yellow.

3. The markings of other races should be those claimed for those races in their purity.

4. A nucleus from which the queen is omitted should score zero on that point.

5. The largest quantity of brood in all stages or nearest to that should score the highest in that respect.

6. The straightest, smoothest and most complete comb, with the most honey consistent with the most brood, should score the highest in that respect.

7. That hive which is neatest and best made and shows the bees, etc., to the best advantage should score the highest.

QUEEN BEES.

Rule. Queen bees in cages should be marked on a scale of 100, as follows:

Quantity	40	Style of caging and display	20
Quality and variety	40		

Remarks: 1. The best in quality consistent with variety should score the highest. A preponderence of Italian queens should overweigh a preponderance of black ones, or, perhaps, of any other race or strain; but sample queens of any or all varieties should be duly considered. Under the head of quality should also be considered the attendant bees. There should be about a dozen with each queen.

2. Neatness and finish of cages should receive due consideration, but the principal points in style are to make and arrange the cages so as to show the inmates to the best advantage.

BEESWAX.

Rule. Beeswax should be marked on a scale of 100, as follows:

Quantity	40	Quality	40
Style of display	20		

Remarks: 1. Pale, clear, yellow specimens should score the highest, and the darker grades should come next in order.

2. By style is meant chiefly the forms in which the wax is molded and put up for exhibition. Thin cakes or small pieces are more desirable in the retail trade than larger ones. Some attention may be given to novelty and variety.

FOUL BROOD AND OTHER DISEASES OF BEES.

Foul brood—bacillus alvei—is a fatal and contagious disease among bees, dreaded most of all by bee-keepers. The germs of disease are either given to the young larval bee in its food when it hatches from the egg of the queen-bee, or it may be contagion from a diseased colony, or if the queen deposits eggs, or the worker-bees store honey or pollen in such combs. If in any one of the above cases, the disease will soon appear, and the germs increase with great rapidity, going from one little cell to another, colony to colony of bees, and then to all the neighboring apiaries, thus soon leaving whole apiaries with only diseased combs to inoculate others. The Island of Syria in three years lost all of its great apiaries from foul brood. Dzierzon, in 1868, lost his entire apiary of 500 colonies. Cowan, the editor of the British Bee Journal, recently wrote: "The only visible hindrance to the rapid expansion of the bee industry is the prevalence of foul brood, which is so rapidly spreading over the country as to make bee-keeping a hazardous occupation."

Canada's foul brood inspector, in 1890 to 1892, reported 2,395 cases, and in a later report for 1893 to 1896, that 40 per cent of the colonies inspected were diseased. Cuba is one of the greatest honey-producing countries, and was lately reported to me by a Wisconsin bee-keeper who has been there, and will soon return to Wisconsin: "So plentiful is foul brood in Cuba that I have known whole apiaries to dwindle out of existence from its ravages, and hundreds more are on the same road to sure and certain death. I, myself, took, in 90 days in Cuba, 24,000 pounds of fine honey from 100 colonies, but where is that apiary and my other 150-colony apiary? Dead from foul brood." Cuba, in 1901, exported 4,975,600 pounds of honey, and 1,022,897 pounds of beeswax.

Cuba at present has laws to suppress foul brood, and her inspector is doing all possible to stamp the same from the island.

Even in Wisconsin I know of several quite large piles of empty hives, where also many other apiaries where said disease had gotten a strong foothold.

By the kindness of the Wisconsin bee-keepers, and, in most cases, by their willing assistance, I have, during the last five years, gotten several counties free of the disease, and at the present writing, March 12, 1902, have what there is in Wisconsin under control and quarantined. This dreadful disease is often imported into our State from other States and counties, so we may expect some new cases to develop until all the States shall enact such laws as will prevent further spread of the same. Arizona, New York (1899), California (1891), Nebraska (1895), Utah (1892), Colorado (1897), have county inspectors, and Wisconsin (1897), and Michigan (1901) have State inspectors. The present Wisconsin law, after five years of testing and rapid decrease of the disease, is considered the best, and many other States are now making efforts to secure a like law.

There are several experimental apiaries in Canada, under control of the Ontario Agricultural College; also a few in the United States, especially in Colorado, that have done great work for the bee-keeping industry, and their various published bulletins on the same are very valuable. The Wisconsin State Bee-Keepers' Association has asked that an experimental apiary might be had on the Wisconsin Experimental Farm, but at present there are so many departments asking for aid that I fear it may be some time before bee-culture will be taken up.

CAUSES OF FOUL BROOD.

1. Many writers claim foul brood originates from chilled or dead brood. Dr. Howard, of Texas, one of the best practical modern scientific experimenters, a man of authority, has proven beyond a doubt that chilled or common dead brood does not produce foul brood. I have, in the last five years, also proven his statement to be true in Wisconsin, but I do believe such conditions of dead brood are the most favorable places for lodgment and rapid growth of disease. Also, I do not believe foul brood germs are floating

in the air, for, if they were, why would not every brood-comb cell of an infected hive become diseased? I believe that this disease spreads only as the adult bees come in contact with it, which is often through robber-bees. Brood-combs should not be removed from any colony on cold or windy days, nor should they be left for a moment in the direct rays of sunshine on hot days.

2. The foul brood may be caused by the need of proper food and temperature. Generally this disease does not appear to be serious during a honeyflow, but at the close of the honey season, or at time of scarcity, it is quite serious, and as the bees at such times will rob anywhere they can find stores, whether from healthy or diseased combs, it is the duty of every bee-keeper to keep everything carefully protected. Hive-entrances contracted, no old combs or any article with a drop of honey in where the bees can get to it. While honey is coming in from the various flowers, quite a portion is used direct as food for the larval bee, and with such no disease would be fed to the bees. Such fed bees, even in a diseased hive, will hatch, as is often the case. I never knew a case where a bee hatched from a brood cell that had ever had foul brood in. If the germs of disease are there in the dried scale attached to the lower side walls, bees will store honey, therein; the queen will deposit eggs, or the cell may be filled with pollen, or beebread, as some call it. Said honey, or pollen, when it comes in contact with those germs of disease, of the food given to the young bee, if in the proper temperature, said germs of disease will grow and develop rapidily.

CAUSES OF CONTAGION.

I fully believe that if the history of foul brood in Wisconsin were known, nearly every case could be traced to contagion from diseased combs, honey, or from home diseased queen-breeders' cages. There are some instances where I have traced the history of contagion in Wisconsin:

1. Diseased apiaries, also single colonies, sold either at auction or private sale. Several law suits have resulted in the settlement of some of the cases.

2. Brood-combs and vaious implements from diseased hives, used by other bee-keepers, and borrowed articles.

3. All the bees in an apiary dead from fould brood, and the hives having an abundance of honey in the brood-combs, said combs placed out by the side of hives, so that neighbor's bees might get the honey. From those combs I lined robber bees to seven other apiaries, and each time became diseased and were treated.

4. Robber bees working on empty honey packages in the back yards of grocery stores and baking factories. Said honey came from diseased apiaries, some located in far distant states, even Cuba.

5. Loaning of hives, combs, extractors, and even empty honey-packages.

6. Buying honey from strangers, or not knowing where it was produced, and feeding it to bees without boiling the honey.

7. Too common a practice of using old brood-combs from some apiary where the owner's bees have died from "bad luck," as he calls it.

8. Queen-bee—by buying queen bees from strangers and introducing them in the cages they came in. I have traced several new outbreaks of the disease to the hives where such queens were introduced, and the queens came from distant states. To be safe, on arrival of queen, put her carefully alone in a new and clean cage with good food in it. Keep her in there, warm and comfortable, for a few hours before introducing. The shipping cage and every bee that came with the queen should be put in the stove and burned. I do not think there is any danger from the queen so treated, even from diseased hives, but I do know of many cases where disease soon appear in the hives, where the shipping cage and bees were put in with the colony. The great danger is in the food in said cage being made from diseased honey. I was called to attend a state bee-keepers' meeting in another state, and I asked if any there had had experience with foul brood. There was a goodly number of raised hands. Then I asked: "Do any of you think you got the disease by buying queen-bees?" Again several hands were raised. Even bee-keepers there had traced the disease in their apairies to the buying of queens, and all from the same breeder. If you get queens from abroad, I hope you will do with them as I have described above. Better be on the safe side.

EXPERIMENTS.

1. A prominent Wisconsin bee-keeper some years ago had foul brood among his bees so bad that he lost 200 colonies before the disease was checked. Having a honey-

extractor and comb-foundation machine, he first boiled the hives in a large sorghum pan, then in a kettle all combs were melted after the honey was extracted; the honey was boiled and also the extractor and implements used. The bees were returned to their hives on comb-foundation he made from the wax made from the melted combs, then fed the boiled honey. Several years have passed, and there has been no sign of disease in his apiary since.

2. Foul brood germs are not always killed when exposed to a temperature of 212 deg. F. (boiling point) for 45 minutes. But in every case where the combs are boiled in boiling water, and same were well stirred while boiling, no germs were alive.

3. Foul brood in brood-combs is not destroyed when exposed to the temperature of Wisconsin winters of 20 deg. below zero, and in one case I developed foul brood from combs that had been exposed to 28 deg. below zero.

4. Honey, if sotred in diseased combs, acts as a preserving medium, and in such cases the germs of disease will remain so long as the comb is undisturbed. Four years at least.

5. Honey or beeswax, or the refuse from a solar or sunheat extractor, is not heated enough to kill foul brood germs. Several cases of contagion where robber bees worked on solar extractor refuse or honey.

6. Comb-foundation made by supply manufacturers is free from live germs of disease and perfectly safe to use. To prove this experiment beyond a doubt, I took a quantity of badly diseased brood-combs from several apiaries and render each batch of combs into wax myself on the farm where found. Then on my own foundation mill I made some brood-foundation. I also took quite a quantity more of said wax, went to two wholesale comb-foundation manufacturers, and both parties willingly made my experimental wax into comb-foundation, just the same as they do every batch of wax, I then divided the various makes of foundation, and selected 20 of the best bee-yards in Wisconsin, where no disease has ever been known; had the same placed in 62 of their best colonies, and in every case no signs of disease have appeared. Those same colonies continue to be the best in the various apiaries.

SYMPTOMS OF FOUL BROOD.

1. The infected colony is not liable to be as industrious. Hive entrance with few guard bees to protect their home. Sometimes fine dirt or little bits of old comb and dead bees in and around the hive-entrance, and often robber bees seeking entrance.

2. Upon opening the hive, the brood in the combs is irregular, badly scattered, with many empty cells which need inspection.

3. The cappings over healthy brood are oval, smooth, and of a healthy color peculiar to honey-bee brood, but if diseased, the cappings are sunken, a little darker in color, and have ragged pin holes. The dead larval bee is of a light color, and, as it is termed, ropy, so that if a toothpick is inserted and slowly withdrawn, this dead larva will draw out much like spittle or glue.

4. In this ropy stage there is more or less odor peculiar to the disease; it smells something like an old, stale gluepot. A colony may be quite badly affected and not admit much odor, only upon opening of the hive or close examination of the brood. I have treated a few cases where the foul brood odor was plainly noticed several rods from the apiary.

5. Dried Scales—If the disease has reached the advanced stages, all the above described conditions will be easily seen and the dried scales as well. This foul matter is so tenacious that the bees cannot remove it, so it dries down on the lower side-wall of the cell, midway from the bottom to front end of the cell, seldom on the bottom of the cell. According to its stage of development, there will be either the shapeless mass of dark brown matter, on the lower side of the cell, often with a wrinkled skin covering, as if a fine thread had been inserted in the skin lengthwise and drawn enough to form rib-like streaks on either side. Later on it becomes hardened, nearly black in color, and in time dries down to be as thin as the side walls of the cell. Often there will be a small dried bunch at the front end of the cell, not larger than a part of a common pin head. To see it plainly, take the comb by the top bar and hold it so that a good light falls into the cell at an angle of 75 degrees from the tip of the comb, while your sight falls upon the cell at an angle of about 45 degrees. The scales, if present, will easily be seen as above described. This stage of disease in combs is easily seen, and is always a sure guide or proof of foul brood. Such combs can never be used safely by the bees, and must be either burned or carefully melted. Be sure not to mistake such marked combs in the spring for those soiled with bee dysentery. The latter have a somewhat similar

appearance, but are more or less surface soiled, and will also be spotted or have streaked appearance by the dark brown sticky excrements from the adult bees.

TREATMENT.

"A bee-keeper who does not discover foul brood, before his nostrils remind him that there is something wrong with his bees, is not the proper person to treat the case." Dr. Howard, in his valuable book on foul brood, states: "I regard the use of all drugs in the treatment of foul brood as a useless waste of time and material, wholly ineffectual, inviting ruin and total loss of bees. Any method which has not for its object the entire removal of all infectious material beyond the reach of both bees and brood, will prove detrimental and destructive, and surely encourage the recurrence of the disease." In Wisconsin, I have tried many methods of treatment, and cured some cases with each method; but the one that never fails, if carefully followed, and that commends itself, is the McEvory treatment. Canada's foul brood inspector has cured foul brood by the wholesale—thousands of cases.

McEVOY TREATMENT.

"In the honey season, when the bees are gathering honey freely, remove the combs in the evening and shake the bees into their own hives; give them frames with comb-foundation starters, and let them build comb for four days. The bees will make the starters into comb during the four days, and store the diseased honey in them, which they took with them from the old comb. Then, in the evening of the fourth day, take out the new combs and give them comb-foundation (full sheets) to work out, and then the cure will be complete. By this method of treatment all the diseased honey is removed from the bees before the full sheets of foundation are worked out. All the old foul brood combs must be burned or carefully made into wax, after they are removed from the hives, and all the new combs made out of the starters during the four days must be burned or made into wax, on account of the diseased honey that would be stored in them. All the curing or treating of diseased colonies should be done in the evening, so as not to have any robbing done or cause any of the bees from the diseased colonies to mix and go with the bees of healthy colonies. By doing all the work in the evening, it gives the bees a chance to settle down nicely before morning, and then there is no confusion or trouble. This same method of curing colonies of foul brood can be carried on at any time from May to October, when the bees are not getting any honey, by feeding plenty of sugar syrup in the evenings to take the place of the honey flow. It will start the bees robbing and spread the disease, to work with foul brood colonies in warm days when the bees are not gathering honey, and for that reason all work must be done in the evenings when no bees are flying.

"When the diseased colonies are weak in bees, put the bees, two, three, or four colonies together, so as to get a good sized colony to start the cure with, as it does not pay to spend time fussing with little. weak colonies. When the bees are not gathering honey, any apiary can be cured of foul brood by removing the diseased combs in the evening and giving the bees frames with comb-foundation starters on. Then, also, in the evening feed the bees plenty of sugar syrup, and they will draw out the foundation and store the diseased honey which they took with them from the old combs; on the fourth evening remove the new combs made out of the starters, and give the bees full sheets of comb-foundation, and feed plenty of sugar syrup each evening, until every colony is in first class order. Make the syrup out of granulated sugar, putting one pound of water to every pound of sugar, and bring it to a boil. As previously stated, all the old comb must be burned, or made into wax, and so must all new combs made during the four days. No colony is cured of foul brood by the use of any drug.

"A. I. Root, of Medina, Ohio, says: 'The starvation plan, in connection with burning the combs and frames and building the hives, has worked the best in treating foul brood. It never appeared after each treatment, though it did in some cases where the hives were honey-stained and not boiled, thus confirming the theory or fact of spores.'"

All the difference from the McEvory treatment that I practice is this: I dig a deep pit on level ground near the diseased apiary, and after getting a fire in the pit. such diseased combs, frames, etc., as are to be burned are burned in this pit in the evening, and then the fresh earth from the pit returned to cover all from sight. Often I use some kerosene oil, a little at a time being poured on old brood combs, or those having much honey in, as they are hard to burn. If diseased combs with honey in are burned on the surface of the soil, there is great danger; the honey, when heated a little, will

run like water on the soil, and in the morning the robber bees will be busy taking home the diseased honey that was not heated enough to kill germs of foul brood.

I also cage the queen while the bees are on the five or six strips of foundation. It helps to keep the colony from deserting the hive and going to other colonies.

R. L. Taylor, Michigan University Experimental Apiary, reports: "The plan that the colony be shaken out into another hive after being allowed to build comb for four days, I have proven, in 100 cases, to be unnecessary."

In Wisconsin I, too, have cured several cases by the one transferring, when honey was not coming in very freely, but it is better, and a great saving of time to both bees and owner, to exchange in three or four days, those foundation starters, for full sheets of foundation. Diseased brood-combs and those with honey in, if melted in a sun or solar extractor, the wax, honey or residue is not hot enough to kill germs of foul brood. This I have proven by several experiments. It must be boiled and well stirred while boiling, to be safe.

I do not believe in, or practice, burning any property, such as hives, bees, beeswax or honey, that can be safely treated and saved. Many times it is poor economy to save all, and so many bee-keepers are not so situated as to keep all diseased materials from robber bees while taking care of it; the best and only safe way is to burn the diseased combs and frames.

UTAH.

Utah has county inspectors, and from one who has remarkable success I copy the report of his method of treatment.

"Wherever found it should be dealt with earnestly and with dispatch. If the colony is weak, I recommend something to kill the bees, and, in order to do this without letting a bee escape, take a tablespoonful of sulphur and place it in the hive entrance of the hives; if there is any breeze, turn the hive so it will blow in the entrance. Then fire the sulphur and it will soon kill the bees. This should be done early in the morning, before any of the bees are flying, as one bee escaping from the hive might carry the disease to any colony with which it may take up its abode. If the colony is a strong one, I would keep the entrance partly closed, so as to prevent any other bees from getting in. Then as soon as fruit blossoms come out so the bees can obtain honey, I treat them. I procure an empty box of any kind, so it is clean, then find the queen, put her in a screen wire cage, which is easily made. Take a small piece of screen roll it up and tie a string around either end; cork up one end, then place the queen and a few workers, for company, in the cage, and place in the other end cork. Put same in this box, and shake all the bees out of their hive into this box. This must be done in the evening, when no bees are flying. Keep the queen in this box for 24 to 48 hours, allowing the bees to fly in and out as they please. Next take a clean hive, with good, healthy combs or foundation, and shake bees into it, letting the queen go, and they will be free from disease. The old combs are melted into wax, bringing same to a good boil. Often washing with boiling water any hives or implements that might contain disease. Whenever strictly followed, this has affected a cure."—C. Wilcox, Emery Co., Utah.

PICKLED BROOD.

Some seasons pickled brood is quite bad among bees, and in a few cases I have known it to reduce large colonies, even large apiaries, to doubtful hopes, but those same colonies, after I gave them treatment, were in a month free from disease. Sometimes it takes as careful handling as if foul brood. I do not believe it is contagious, for all I have seen 60 colonies in one apiary badly reduced by it. As an experiment, one of my out-apairies had 50 colonies at one time with pickled brood. I treated them, and all were soon free from dead brood. At the same time I took ten of the worst brood-combs, where at least two-thirds of the brood were dead, and placed these combs in other strong, healthy colonies. They at once cleaned out the dead brood, and reared as nice brood as one could ask for.

SYMPTOMS.

The larval bees (in last of May and through June show light brown spots; a little later the cappings have small holes in—the cappings are not shrunken or dark colored, as in foul brood. The dead bee will be first swollen, with a black head dried to a hard bunch, and often turned up—Chinaman-shoe-like. The skin of the dead bee is quite tough, and, if punctured, the thin, watery fluid of the body will flow as freely as water,

often a little yellow or brownish colored from the dissolved pollen from the abdomen of the bee. It has very little or no smell; does not at any time stick to the walls of the comb; is easily pulled out of the cell; is never ropy or sticky, and, if the colony is properly cared for, the bees will take care of themselves. Plenty of liquid, unsealed honey and pollen near the brood, and hives so protected as to keep the bees and brood comfortable on cold days and nights.

Never put bees on old black brood-combs, or those with dead broods in; better make wax of the combs, and give the bees full sheets of brood-comb foundation.

TREATMENT.

Keep all colonies strong, with plenty of unsealed honey near the brood, and if hives are properly sheltered, so as to be warm on cold days and nights, there will be little or no pickled brood. If the queen is old, shows signs of weakness by putting several eggs in one brood-cell and nursing several others, so that the brood is patchy, I would kill such a queen, feed the bees a little, and, when queen-cells are started, remove them all and give them a queen and bees, between two of her own brood-combs from a hive where she has lived. I do not think pickled brood is often the fault of the queen, but rather a lack of proper food and heat in the hive. In most cases, a shortage of liquid honey, or moldy pollen, even in hives with plenty of sealed honey in the outer combs. There is a time in spring in Wisconsin, between dandelions and white clover bloom, when there is no honey coming in from flowers, and often cold days and nights, so that the live bees consume the liquid, unsealed honey first, and cluster in a compact body to keep warm; the result often is the larval bee, just changed from the egg to a tender little grub, is either starved, half-fed or chilled, so that it grows slowly, and too often it dies, and then it is we first notice this about the time white clover honey begins to come in. In other parts of the state, where pickled brood appeared, it was from the same cause, and at other dates, which was due to a difference of time of honey bloom.

Wherever I fed daily some honey, or even sugar syrup, and kept the hive warm, all dead brood soon disappeared while in the same apiaries other colonies affected and not so treated, continued for some time, but got rid of it as soon as treated.

Strong colonies of bees in the fall, with a young laying queen, and an abundance of good honey, sealed or capped by the bees, if properly cared for during winter, whether in the cellar or in chaff hives, wintered out of doors in sheltered location, seldom have pickled brood, chilled or other dead brood, or dysentery, and are the colonies that give their owner profit.

BLACK BROOD.

Black brood is another fatal and contagious disease among bees, affecting the old bees as well as the brood. In 1898, 1899 and 1900, it destroyed several apiaries in New York. Last year I found one case of it in Wisconsin, which was quickly disposed of. Dr. Howard made more than a thousand microscopic examinations, and found it to be a distinct form of bacteria. It is most active in sealed brood. The bees affected continue to grow until they reach the pupa stage, then turn black and die. At this stage there is a sour smell. No decomposition from putrefactive germs in pickled brood. In black brood the dark and rotten mass in time breaks down and settles to lower sidewalls of the cell; is of a watery, granulated, syrupy fluid, jelly-like; is not ropy or sticky, as in full brood, and has a peculiar smell, resembling sour, rotten apples. Not even a house fly will set a foot upon it.

TREATMENT.

Best time is during honey-flow, and the modified McEvoy plan, much as I have treated foul brood, by caging the queen five days, remove the foundation starters and giving full sheets, keeping queen caged five days longer. As great care should be taken of diseased hives, combs, honey, etc., as in foul brood.

DYSENTERY.

Dysentery among bees in Wisconsin in the spring of the year is often quite serious. Many colonies die with it. Dysentery is the excrements of the old bees; it is of brownish color, quite sticky, and very disagreeable smelling, and is sometimes mistaken for foul brood.

CAUSES.

1. Bees confined too long in the hives, so that they can no longer withhold their excrements, and are compelled to void the same on the other bees and combs.

2. Poor winter stores, gathered in the fall from honey-dew, cider mills, sorghum mills, rotten fruit; also some kinds of fall flowers.

3. Old and especially moldy pollen or bee-bread.

4. Hives too cold or damp. If moisture from the breath of the bees is not carried out of the hive by some means such as through a deep cushion of some kind over the bees that will absorb moisture and at the same time retain the heat, or by some means of ventilation, so that all is dry and comfortable. If mold forms on the combs or cellar is so damp as to form mold, there is great danger the bees will have dysentery and die.

TREATMENT.

1. First of all, have an abundance of combs of sealed clover or basswood honey in brood-frames carefully saved, and see that each colony is wintered on such food. Three or four such combs will winter a fair colony safely, if confined on those combs late in the fall, and the hive contracted to fit the same. This is one of the most important conditions for success in wintering.

2. If in the fall the bees have gathered this unwholesome honey from the above named sources, it should all be extracted and either exchanged for those honey-combs, or feed the bees good honey or sugar syrup until winter stores are secured. This should be done before cold weather in the fall.

3. Hives contracted and made comfortable, whether in cellar or outdoors.

4. If wintered in chaff hives outdoors, with feed as above directed, and there come one or two warm spells during winter, so that the bees can have a cleansing fight, they will not have dysentery or dead brood, and will be much stronger when clover opens.

If wintered in the cellar, the bees will not need so much honey, and if the winters are generally long, with doubtful warm spells, the cellar will be best. But to keep the bees from dysentery, so often fatal to cellar-wintered bees, they should have such winter stores as above spoken of, then the cellar kept at a medium temperature, about 32 deg. F., ventilated so the air is fresh, and no mold will form in the cellar. Fresh air-slaked lime on the bottom of the cellar may help, if it is damp or has poor air.

5. Dysentery will not appear if bees are kept on sugar syrup, or best grade white clover or basswood honey, and are in a dry place, either sheltered by cellar or chaff-hive.

DR. A. C. BAXTER,

President of the Illinois State Bee-Keepers' Association.

PROCEEDINGS

of the

TWENTY-EIGHTH ANNUAL SESSION

of the

Illinois State Bee-Keepers' Association

Tuesday and Wednesday, December 17-18, 1918

Leland Hotel, Springfield, Illinois

GEO. SEASTREAM,

Treasurer of the Illinois State Bee-Keepers' Association.

PROCEEDINGS OF THE ILLINOIS STATE BEE-KEEPERS' ASSOCIATION.

The Twenty-eighth Annual Meeting of the Illinois State Bee-Keepers' Association was held in the Sun Parlor of the Leland Hotel, December 17 and 18, 1918.

The meeting was called to order by the President, Dr. A. C. Baxter, at 10 a. m., December 17.

PRESIDENT BAXTER.—Gentlemen, you will give attention to the invocation by Rev. Warber, of Alhambra, this State.

INVOCATION BY REV. C. WARBER.

Our Heavenly Father, and Jesus Christ, our Lord and Redeemer —we come before thee with thanksgiving. We thank thee for the manifold blessings that thou hast bestowed upon us, as individuals and as a Nation. We thank thee for the institution of Liberty that thou hast given us. We ask thee to be merciful unto us; grant unto us the forgiveness of our sins; cleanse our hearts with the blood of Jesus Christ, our Lord and Saviour. We thank thee also that thou hast given unto us a peace for which we have been praying in times past. We ask thee to create within the world such government founded upon peace, upon liberty, upon justice and righteousness in harmony with thy will. We entreat thee that thou wouldst bring forth out of the present discord and disagreement and chaos that peace which passeth all understanding, founded upon justice and righteousness everywhere. We ask thee to be with those that govern or shall govern all nations, that they may follow thee and the dictates of their consciences and love, and acting especially in harmony with thy will.

We ask thee to let thy blessings rest upon this, our Nation. Henceforth may discord and sorrow be replaced with happiness. We ask thee to be with those into whose home hath entered grief, and where thou hast taken one of the family or more of the family. We ask thee to be with the bereaved ones, especially with those whom thou hast bereaved of our members of this Association. Especially wilt thou be with the brother Secretary, where thou hast broken the family tie, the bonds of love. Wilt thou let thy blessings rest upon this assembly, and may those things that we do here not only prove beneficial to us, but to all mankind. Let us feel thy presence here, and let that word of thine be renewed in our hearts, "Lo, I am with thee, even unto the end of the earth." We ask these things for Jesus, our Saviour's sake, Amen.

THE PRESIDENT.—Members of the Association—it has been the custom for a number of years in the Illinois State Bee-Keepers' Association, met in Springfield, to have some prominent citizen to welcome

us, and to that end I call upon the Hon. John A. Barber, first vice president of the Springfield Commercial Association.

ADDRESS OF WELCOME.

MR. BARBER.—Mr. President, Ladies and Gentlemen: At the risk of becoming a chestnut, I again have the privilege and the pleasure of welcoming you to this city.

It was said by the late James J. Hill, the great railroad magnate, that it was not the great poets, orators, statesmen or warriors who were the real benefactors of the human race, but, in his opinion, it is the man who can make two stalks of wheat grow where one had grown before, and so, if this Society or Association will enable its members to make a bee-hive produce two pounds of honey where it used to produce one, you will also be entitled to be called benefactors.

At the close of this terrible war, which has tested the resources of the nations, we have been brought to realize more than ever before the importance of the food producers of the world. We have learned that it is not so much the man behind the gun, as the man behind the man behind the gun that brought this war to a successful close. We were taught during the last few months to conserve, to save food, especially to save sugar, "save to win the war" was the common expression, "win the war by saving sugar." Thus being forced to deny ourselves sweets, the people more than ever before began to realize the importance of honey in the human diet. It has been stated by our doctor here in one of his addresses, that honey is a pre-digested food. In my opinion, it has more energizing qualities as a pre-digested food than ever did that well-advertised pre-digested grape nuts that was boasted of all over the world.

Honey is an important diet, and the bee-keepers have done an important work during these strenuous times in producing honey and relieving the shortage on sugar. We have found that honey in a great many ways takes the place of sugar and in fact is a better article of diet than sugar itself.

The bee-hive and the bee have long been known as emblems of industry and I think the man is fortunate who makes his life-work that of the care of bees and who labors among bees.

I want to call the attention of you now here to the December number of the American Magazine, which runs an important line of articles as inspirational themes to inspire others to do better things in their work. In this December issue you will find an article the subject of which is Dr. V. C. Miller, of Marengo, Illinois, an honorary member, I notice, of this Association. Dr. Miller is 88 years of age, and has been a successful bee-keeper, I think for 57 years. He holds the record for the production of section comb honey. The doctor, in his interview, utters a great many words of wisdom which may well be taken by any man in any business. One thing he says: "If you have no other interest in bees than the money to be made out of them, let them alone; but if you are so built as to love bees, to think bees, to dream bees, go to it; your chance to-day is better than when I began." He brings out the fact that a man must love his work, must be in love with his business to make a success. As has been well said

by another man, you have to be a crank in a business if you are going to be a success. Dr. Miller proves that to be a successful bee-keeper you have to live with your bees, you have to love your work, and that is true, whether you are a lawyer, doctor, or whatever you are, if you love your work, if you make it a part of your life, live it, dream it, you make a grand success. I want the members to buy that magazine, it is well worth reading by any bee-keeper.

Ladies and gentlemen, you have certainly reached a point where you are an important factor among the food producers of the world; it is therefore an honor to the city of Springfield that you meet here each year, and I wish you a most successful meeting, both pleasure to yourselves and profit. I thank you.

THE PRESIDENT.—Mr. Barber, we certainly appreciate your welcome, and we thoroughly agree with the idea that the bee-keeper has reached an important station in the affairs of the country, especially as a food producer.

PRESIDENT'S ADDRESS.

Members of the Illinois State Bee-Keepers' Association, Ladies and Gentlemen:

Since last we assembled our hearts and minds have been increasingly absorbed in the world-wide struggle to make the earth again a decent place to live in. It could not be otherwise. We are American citizens and free men. We are not true Americans if we give not our first thought and best effort to this cause of human freedom everywhere—to this holy crusade to rid the earth of conspirators seeking to enslave all its people.

We have entered upon the fifth year since nine criminals, meeting in secret conclave at Potsdam, resolved that "The Day" had come, and plunged the world into a war that has already taken more than nine million human lives. For their "Day" these criminals and their accomplices had prepared for many years. The most devilish feature of that preparation was the systematic mental and moral poisoning of their own people, until that people, once justly renowned for kindliness and humanity, has descended into the very abyss of fiendish treachery and bestial cruelty.

With the German people, as we once knew them and in whose blood many of us are sharers, we have indeed no quarrel. In the light of Louvain and the Lusitania, and all the horrors since we may well doubt whether the German people we once knew still exist within the realms ruled by Hollenzollern and Hapsburg. A great political philosopher long ago observed: "Every people has the kind of government it deserves." Hence the continued existence of the German people we once knew, all respected, and many loved, must be doubted so long as those bear its name continue to tolerate government so depraved, treacherous and criminal.

For these reflections upon public situation I make no apology. They acutely condition our bee-keeping enterprise. Because of them we have little strength to spare for our special bee-keeping interests, and may well be content to "hold fast and carry on."

When last we met we had with us, as for many years before, the kindly presence and wise counsel of Charles Becker of Pleasant Plains. Mr. Becker was an honored member of this Association and had been our Treasurer for many years. His life was gentle and his deeds were just and faithful, to him death came as a release from long suffering. Knowing what he suffered, we cannot regret his release; but we can and do honor his memory.

How far the offering by our young manhood overseas of the last full measure of devotion has touched our industry has not yet become apparent. I suggest that measures be taken to compile a record, that we too may have our roll of honor, and may testify our reverence for their sacrifice, yet all our words must be poor and weak compared with the splendor of their deeds.

What's words to them, whose faith and truth
  On War's red touchstone rang true metal;
Who ventured life, and love, and youth,
  For the great prize of death in battle;
To him who, deadly hurt again
  Flashed on before the charges thunder,
Tipping with fire the bolt of men,
  That rived th' invader's line asunder.

Since our last meeting another year of bee-keeping experience has rolled around. To some of the bee-keepers of the State it was a year of abundance, but to the vast majority it was a year of shortage due to the cold spring and the early drouth season, and the cold and wet fall causing the bees to go into winter quarter short of stores. But the short crop of honey was offset somewhat by the high price of honey, which no doubt was due to the sugar shortage, causing many people to use honey. In fact the war may prove somewhat of a blessing to the bee-keeper in the future as many have never before tasted the "delightful sweet" and it will be well for bee-keepers to exert their best efforts to produce more honey in order to supply the demand. There has never been produced enough honey under normal conditions to supply all who would eat it if they only knew that their health would be better—their life pleasanter and sweeter—if they would add to their regular daily "bill of fare" honey, that we bee-keepers produce and offer for sale. When people once realize what a healthful food honey is, there will be no further trouble about the price and a market for our product.

With the ravages of foul brood and the demand of the public for honey, never was there a time, calling for the best in bee-keepers and for better bee-keepers, to put forth their best endeavors to reap the golden harvest.

In conclusion I would urge bee-keepers to look at the selling of his crop in a business way. Dismiss all enmity for your neighbor bee-keeper. Such enmity has prompted many to cut prices year after year until the local trade is ruined or demoralized to a point where there is no profit in it. If you bottle your extracted honey figure your time worth something and add it to the jobbing price along with the cost of the bottles, labels, etc. Just as soon as you cut prices

you will suffer the results. Produce and offer for sale only the best and have it cured by the bees.

The next order of business is the reception of members and issuing of the badges, and then we will have the Secretary's report. If there is any one here that wishes to pay his dues or receive his badge, you will have an opportunity to do so: I will give you a few minutes.

Recess.

After recess the meeting was again called to order by the President.

THE PRESIDENT.—The next order of business is the reading of the minutes of the last meeting.

Secretary read minutes of last meeting.

THE PRESIDENT.—Gentlemen, you have heard the reading of the minutes of the last meeting. What is your pleasure?

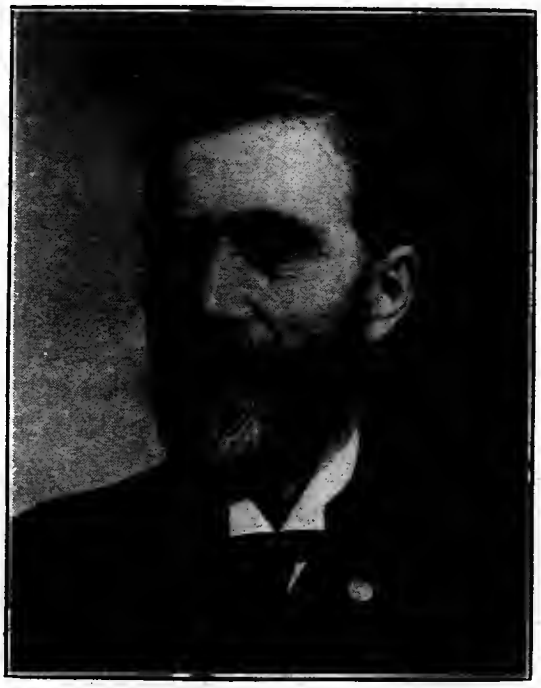
MR. KILDOW.—Move that they be accepted.

THE PRESIDENT.—Moved and seconded that the minutes be accepted. All in favor signify by the usual sign. Contrary? The ayes have it; it is so ordered.

The next order of business is the Secretary's financial report. The Chair will appoint Mr. Heinsel in charge of the Question Box. If he cannot find anybody to ask questions, he can do it himself.

REPORT OF SECRETARY.

Our financial report is rather a complicated matter, since we did not draw anything that goes into the hands of the Treasurer. As no doubt you all know, our appropriation has not been given to our Treasurer since a year ago last July. When we sent our report in to the State Auditor, we were notified that our money would not be paid in a lump, but would be paid on orders. We started last year here to make out the orders and vouchers that went to the State Auditor to draw the money. The amount which was in Mr. Becker's hands was $458.99.



J. A. STONE,
Secretary, Illinois State Bee-Keepers' Association.

Two hundred and fifty fees for 1918 I have put down at 25 cents each, 75 cents goes to the Bee Journal, which makes $62.50. We received 103 and then 2 added, making 105 at 25 cents, $26.25. Then from the Chicago Northwestern, 68 fees at 50 cents, $34 and since we received six members the six members came from northern Illinois and southern Wisconsin, at 50 cents, $3, making a total of $125.75, and a total membership of 419, I make it from a rough addition.

Our Legislative Committee reported to the Legislative Bureau what we wanted to spend money for and we asked for $200 for the shorthand reporting and for postage and stationery, $100 for printing, $500 for expenses of meetings, and they changed that so it was $550 for printing, $200 for the shorthand and $50 for postage, and then they put $250 on to the meeting. When they sent out to the Secretary the blanks to be filled out to go to the Governor we sent them back and told them that there was not any item there that we had anything to do with and then they asked me to come to their office the first time I was in town and they instructed me there to change those things and change the headings and I did and they put down everything for operating supplies and expenses and office expenses, they put it all down and had me report under those two heads, and at the end of the year they went back and asked me to report the way in which we had asked the Legislature to report under this head. Mr. Kildow is smiling, he knows what a mix-up it was, but we got through all right. We reported it, so that we will have it reported another year just as they have it in the report. But it is not in there the way they have it. They have put down $550 for printing, $200 for the shorthand reporter, $50 for postage and $200 for annual meeting.

THE PRESIDENT.—Gentlemen, you have heard the report of the Secretary.

MR. RESSINGER.—I move that it be referred to the Auditing Committee.

(Motion seconded and carried.)

THE PRESIDENT.—I stated a few moments ago that I had appointed Mr. Seastream as Treasurer and it is impossible for him to be here on account of the illness of his wife and I will ask Mr. Heinzel to read the Treasurer's report.

Geo. Seastream, Treasurer Illinois State Bee-Keepers' Association in account—

1918.	Dr.	Cr.
Nov. 1—To amount from Becker Estate	$458.99	
Nov. 1—To amount from Secretary Stone	125.75	
Nov. 1—By Secretary's salary for 1918		$100.00
Nov. 1—To balance on hand	484.74	

MR. HEINZEL.—I might say that that $458.99 is what was in the hands of Mr. Becker at the time of his death. Mr. Seastrom has not asked the bank for the acknowledgment of the money on deposit, but I can vouch for that. Mr. Seastream probably did not know that that is required, but the report is correct nevertheless.

On motion, duly seconded, the report of the Treasurer was referred to the Auditing Committee.

The President appointed as Auditing Committee Messrs. A. L. Kildow, Frank Bishop and A. O. Heinzel.

THE PRESIDENT.—I think it would be well at this time to appoint a Committee of Resolutions on Mr. Becker's death, and I will appoint Mr. Dadant and the Rev. Warber. They will report tomorrow.

We might take up at this time the question of the dues for the ensuing year. There seems to be rather a tendency among the members to raise the State Association dues, changing it to $1.50 instead of $1, and I personally think it will be well to make the dues of the State society and the adjunct societies in the State the same, so that the

Chicago Northwestern will be paying $1.50, Southern Illinois $1.50, and the Illinois River Valley will pay $1.50 and we will not come into conflict with our financial business if we do that.

MR. KILDOW.—I do not know just exactly what the Fox River fees are, but the Chicago Northwestern pays $1.50. If we pay $1.50, that will make $3.

THE PRESIDENT.—No, they pay 50 cents out of their dues to us.

MR. KILDOW.—That makes them members. It seems that would work out all right.

THE PRESIDENT.—You see, under the present condition, a man who lives in Chicago can pay $1 and belong to our Association. If he wants to join through the Northwestern he will have to pay $1.50 and it may work a hardship on the Northwestern and I have had some objection during the past year from the members of that Association. They could not understand why we did not have our dues the same as others, so that a man would belong to the Association at home which I really, personally, believe is the place for him to belong, while he can belong to our society by getting in under that rule. I would like to hear a little discussion about the matter.

MR. DADANT.—In regard to the Illinois Valley Bee-Keepers' Association, I was present at their meeting and after I got home one of them wrote me, I think as President, that I had agreed to make them members of the State Association and furnish them the American Bee Journal, all for $1, and I did not remember any such promise. I think that their membership fee was $1, they may have changed it. But the man became so personal that I wrote that I would pay for their membership in this Association if they insisted on it, and I wrote to our Secretary. I don't know whether our Secretary remembers it. Are you sure that they charge $1.50.

THE PRESIDENT.—I was informed that they were going to raise it to $1.50.

MR. DADANT.—Well, that would make it right. You see they could still have a little money, make a subscription to the Journal and pay their membership to the State Association. There was evidently a misunderstanding. I showed them the reasoning, thought it was very plain, but he cut it short by saying that that was my agreement, he didn't care how things were, that we would have to abide by the agreement. I believe it will be best to have the entire membership at the same price and let them become members of our Association through their Association. Then what our Secretary complains of, that the Association got less out of our members than it got out of the members that came through the other Associations would be then changed. We would get then 75 cents from our members and 50 cents from members outside.

THE PRESIDENT.—Anyone else have anything to say?

MR. STONE.—That got to be a very great mix-up; the President was up there and I understand told them distinctly they would have to send their dollar to the Secretary of the State Association and then they would get membership and the American Bee Journal. Instead of that they sent their money off to the American Bee Journal and

ignored our society entirely. Then the Secretary wrote me and asked me to send them receipts for the money and I wrote and told him that I had not received anything, and I could not receipt for what I had not received and their names are not on our membership list, although they are in the report.

MR. DADANT.—I think this matter will work out satisfactorily. The Northwestern has no controversy with this Association, they charge $1.50 and we get nothing except through the Association. This matter was very annoying to me and I certainly would have rather paid 50 cents a member out of my pocket than to have them think that we were trying to induce them to do a thing that could not be done.

THE PRESIDENT.—I might say in connection with this matter that I was at the meeting Mr. Dadant attended. I will clear him of any blame in that connection. They asked me in regard to joining the State Association and I told them if they sent us the same rate that the Northwestern or their other societies paid, or if they joined and simply formed an adjunct and came into our society paying the same fee that we paid, we would furnish them, as we furnish our members, the report and the American Bee Journal. And the Secretary was distinctly instructed to do all business through the Secretary of the State Association. Well, he had gathered up the money and sent it over to Mr. Dadant for subscription to the American Bee Journal and ignored the Secretary of the State Bee-Keepers' Association. So they had just paid the subscriptions to the Bee Journal and had not joined the State Bee-Keepers' Association.

MR. RESSINGER.—I move you that we advance the fees of the Illinois State Bee-Keepers' Association to $1.50, to equal the Northwestern.

THE PRESIDENT.—Do I hear a second to that motion?

THE SECRETARY.—I hope nobody will second that.

MR. HEINZEL.—I will second it.

THE PRESIDENT.—State your objections, Mr. Stone.

THE SECRETARY.—A year or two ago I got papers from a Canadian Bee-Keepers' Association and the report of their treasurer showed that they had paid out nearly all that they received as fees for bee journals, and they had a membership of nearly one thousand, and I could not understand why they had such a big membership; but when I saw the way they spent their money, that they only had a little fee from the members and the rest all went for the bee journals, that was what put me on the track; corresponding with Mr. Dadant to know what rate they would make to us for the Bee Journal, also with Root they gave us those rates. We did not need the money in the treasury. You observe we took in $125 and my salary is all that is paid out of it, $100, and $25 that will now be carried in the treasury for we don't need it, and I believe in making it just as cheap as we can.

MR. HEINZEL.—Yes, it is the membership that counts, not the money.

THE PRESIDENT.—Well, we will put it to a vote, after discussion. Has anyone else anything to say on this question?

MR. HEINZEL.—I do not believe in raising dues as long as we have got a considerable amount on hand. I believe that if we could spend it, it would be a different thing, spend it for some good object. As long as we have a good bunch of money on hand, leave it down so we can get a good big membership. If you ask a man for $1.50 for the Association, he will hesitate a long time, but if you can explain to him that you can give him practically $1.50 for the $1 he will jump at the chance and as long as our State is giving us a pretty good appropriation, it is all right.

MR. RESSINGER.—How much appropriation do we get from the State?

THE SECRETARY.—A thousand dollars a year.

MR. HEINZEL.—And we have never been able to spend it.

MR. DADANT.—There are good arguments on both sides. The motion is in answer to the Secretary's criticism of getting 50 cents from the branch Association and only 25 cents from our members. Now, can the Secretary tell us what he would do in order to change that? There is a very easy way to do and that is, charge the other Associations only 25 cents.

MR. HEINZEL.—That is the idea.

MR. DADANT.—Is the Secretary willing to do that?

THE SECRETARY.—That would not raise money enough to pay the Secretary's salary, and the Secretary has pretty nearly made up his mind that the work is more than he can do, or find the time for.

THE PRESIDENT.—That is another question. We won't discuss that now.

THE SECRETARY.—We need the money and we want to make the same charge to our members that we do the others. The only way is to raise it at least to $1.25.

MR. DADANT.—Here is a gentleman that attended one of those meetings over in the Illinois River Valley and he paid us nothing and was wondering whether he was a member of the Association. Now, if they charge more, they do not get the members, we do. If we charge more, they get the members, we do not. We ought to make it so that it is absolutely immaterial whether you join at Chicago, or the Illinois River, or here.

I move that we amend the motion to $1.25.

THE PRESIDENT.—You have heard the amendment. It has been moved and seconded that we amend the motion so that the fees will be $1.25.

THE SECRETARY.—Mr. President, that is a matter on which we have to change the constitution and by-laws.

THE PRESIDENT.—Then the motion is out of order.

The Secretary here read the motion adopted at the annual meeting of 1905 in regard to amending the constitution.

THE PRESIDENT.—The only thing we can do is to let this thing lay over for one year and notify the Association, for the next meeting.

THE SECRETARY.—There might be a motion made to that effect.

THE PRESIDENT.—The Chair will entertain a motion to have this resolution presented in one year. That is the easiest way out of it.

MR. DADANT.—I then move that in order to make this motion legal, according to the constitution, it be presented again and voted upon at the next annual meeting.

The motion was seconded by Mr. Heinzel.

THE PRESIDENT.—Gentlemen, you have heard the motion stated by Mr. Dadant. All in favor signify by the usual sign. Contrary. It is so ordered.

Now we are ready for the question box.

QUESTION BOX.

QUESTION.—A hive that has had American foul brood, with the frames taken out and burned and the hive well singed inside, will it be safe to use for bees again?

MR. KILDOW.—I do not see why it would not be. There is nothing left. That is a good job, I do not see why it should not be safe.

MR. HEINZEL.—I would not think it would be necessary to scorch the hive.

MR. KILDOW.—It is not necessary, but if the man wants to scorch it, he can.

MR. RESSINGER.—You would consider it safer to do that?

MR. KILDOW.—It would be safer, I suppose, an extra precaution.

QUESTION.—What is the best plan to stop loss of colonies with moth?

MR. KILDOW.—I think the one that has the question box could answer that kind of question.

MR. HEINZEL.—Probably Mr. Kildow can answer it better than I can, but there are several reasons for the moths getting into the hive, one of which is queenlessness. It could be pickled brood, or a weak colony in the spring of the year. The best plan to stop loss of colonies with moths is to keep them healthy, keep them strong and keep good Italian queens.

THE PRESIDENT.—The question resolves itself back to one thing, that the bees are not strong. The question is then, what causes them to be weak?

MR. KILDOW.—It comes down to one point, keep good, strong Italian colonies. It simmers down to that.

MR. HEINZEL.—That is the idea.

QUESTION.—When would be the best time to put in new queens?

THE PRESIDENT.—I would like to have Mr. Dadant answer that.

MR. DADANT.—Any time except between the first of October and the 15th of April, in our latitude. I think putting the queens in either too early or too late is more or less risky. The best time to succeed in introducing queens—for that is really the gist of the question—is when the bees are harvesting honey. You can introduce a queen to a hive, or you can introduce bees from a strange colony much more safely when they are harvesting honey, in fact, they accept drones from other hives without a murmur, and those same drones, or even their own drones, they would kill in times of scarcity. But if I had a colony queenless, I would introduce a queen, whether it was in April, or way in September or perhaps October, if the weather was favorable.

QUESTION.—What is the difference between corn sugar and glucose?

MR. HEINZEL.—I think that is another one for Mr. Dadant or Dr. Baxter.

MR. RESSINGER.—I think that is a good question for Dr. Baxter.

THE PRESIDENT.—I suppose that means commercial glucose?

MR. HEINZEL.—I suppose so.

THE PRESIDENT.—Commercial glucose as it appears on the market in refined condition is pure diastase; corn syrup, or the sugar that appears upon the market, is part maltose and part diastase. Now, maltose, by action of an enzyme, forms mere diastase, there is possibly a little sulphuric acid that was carried over from the boiling of the syrup that is not yet precipitated. I have yet to see a corn syrup or a corn sugar on the market but what contain there sulphuric acid. We have tried it time and time again.

MR. RESSINGER.—I asked that question for this reason, that I obtained about 200 pounds of what was called corn sugar. I asked Mr. Dadant what was the difference between corn sugar and glucose. I had my doubts whether they were the same.

MR. PRESIDENT.—They are the same thing, only not in a liquid state, one has crystallized.

MR. DADANT.—Let me explain what I stated to this gentleman. My first experience goes way back, I would not be sure whether it was '78, '79 or '80. We had a meeting of bee-keepers at Burlington, and this question of glucose was a new question, people had not investigated it. My father had gone to a druggist to find out what glucose was, and the druggist had said, "You know they are selling golden syrup, golden drips, a number of different golden things, that is glucose." Father said, "How do you know that?" "Why," he said, "you can find out for yourself, go and get a sample and pour it in tea, and it will make the tea black. Why? Because it contains sulphuric acid, and the sulphuric acid acts on the tannin of the tea and turns it black."

So we went to that meeting with a slight amount of knowledge in regard to glucose, very much convinced that it was not suitable for bees. But at the meeting some bee-keepers had corn sugar, or hard glucose, and from the question the gentleman asks, it is exactly what they had there, a yellowish lump that looked more like yellow chalk than sugar. We had a chemist present there who took the sample of corn sugar away with him and returned in the afternoon with it diluted in a little bottle. In that vial there was about one-half inch chalk at the bottom. He told us it was the precipitate that he had got from that liquefied sugar, sulphate of lime. Then he explained to us that corn syrup, or golden drips, or in fact any of those fancy goods that you hear of is starch boiled with sulphuric acid which changes it to sugar. I am not using the scientific terms, just the common, plain terms; they took out the sulphuric acid by using lime, which combined with the sulphuric acid and made sulphate of lime, and they took out the lime when they wanted the liquid, and when they did not want it they simply let it harden and the chalk was still left. I was very much convinced that that corn sugar was an inferior article.

THE PRESIDENT.—On the whole that is correct.

MR. DADANT.—This was 38 years ago. There is probably some improvement.

THE PRESIDENT.—On the whole it is correct. The only thing they are doing to-day to make glucose is carrying the process a little farther and using the enzyme that occurs in the sugar to break up the maltose into simple sugar. The golden diastase is pure, and the pure does not contain the free acid, but you do not find that usually commercially on the market. It is being used for certain preparations, certain products, trying to take the place of sugar. But in forming the corn syrup in this country—one of the most prominent ones to-day is Karo—which is made by boiling corn starch in sulphuric acid and remove the sulphuric acid after the boiling is completed by precipitating it with calcium carbonate, which forms calcium sulphate. It is then filtered back through the precipitate, and you will have your syrup, which ferments if you dont leave a little acid in it to stop action of any enzyme which might not be killed, and then they add some carbon bi-sulphate, which is a poison which we use to kill wax moth. This also helps to keep the liquid from turning brown. You can remove all lime salts and remove all acid and retain your diastase, which is your glucose. Now, as has been said, you can have the syrup crystallize any time by the evaporation of the water, but it is a conglomerate mass, just diastase and maltrose and calcium sulphate and some of this carbon in it, it is not good for man, insect or beast.

MR. DADANT.—That calcium sulphate is chalk.

THE PRESIDENT.—Yes, chalk or lime.

MR. RESSINGER.—I tried the experiment on tea, with this sugar, but I could not get a dark color.

MR. DADANT.—It is better than it used to be.

THE PRESIDENT.—You had then the crystallized glucose, only pure glucose left, but it is not a good food for me, it is not a good food for you, for the simple reason that it is not a balanced ration, it does not contain the "left hand" sugar, the levulose. When you take diatase into your system, very little of it is absorbed; it does not pass through the intestinal tract; sugar passes through the intestinal walls if levulose is present, but will not do this if levulose is absent. Now the bee—I cannot give you all the digestive processes or the forms that it takes in the bee, but he must have a balanced ration, just the same as you must. That is true of all organisms, and it must have this levulose in order to use the diastase.

QUESTION.—Is honey dew a good honey to stimulate brood rearing?

THE PRESIDENT.—Is there any one here who thinks he can answer that? Mr. King has had some experience with honey dew.

MR. KING.—Well, it is not a good honey, no, but it will do.

MR. DADANT.—I wish to object to the statement that it is a dew. The greater part of the honey dew that we get is a product of plant lice. Now, I want to state to you gentlemen that I was of an entirely different opinion for a number of years, because I had never seen lice on the top of the leaves, and the dew is on top of the leaves, and one day in passing through the woods where there was more or less honey dew, I found three dead leaves, dried up and shriveled,

with dew on top. Till then I believed it was produced by the exudation of the leaves, but this was evidently not from the leaves themselves, since it was on top of dead leaves. In reading of lice I found that the winged lice, plant lice, winged insects of that species, dropped the dew, and I had the good luck at one time, of seeing it done; standing about 10 o'clock in the morning turned towards the sun in front of a tree, the tree was between me and the sun, and I saw the little drops come down, like very light rain. I could not have seen it if I had not been facing the sun. They were very small drops, but they were evidently dropped by those insects. The lice without wings, were on the under side of the leaves. They did not cause it because the drops came from above; those winged insects dropped the dew. The lice without wings never, or at least rarely produce it. It is the winged lice.

MR. KILDOW.—The lice on the under side of the leaves would drop it on the leaves below.

MR. DADANT.—Yes, but from watching the winged lice, I am of the opinion that they dropped the honey dew. As to plant secretion, Bonnier, the French scientist, wrote a book on the subject. He explained how a liquid sweet could come outside of the blossoms, especially in the joints of the leaves and in certain parts of the joints, but it was always in some joints of the plants. That is very rarely seen. The Swiss bee-keepers harvest a great deal of dark honey, honey dew, from evergreens, from pines, and they say it is very good, they say it sells at the same price as the light colored honey. When I was in Switzerland I did not get to see that honey, but I have very little faith in it.

THE PRESIDENT.—What do you think of the so-called honey dew as a food for bees to stimulate brood rearing?

MR. DADANT.—It is deadly in the winter time, but I think they will assimilate it all right in the summer time. I know it is much sweeter than glucose, the bees prefer it.

THE SECRETARY.—Is it not more stimulating than honey to the brood?

MR. DADANT.—I don't know.

MR. KILDOW.—I cannot see why it is not good for the spring of the year, or during the warm weather when bees are flying every day or two. I know it is very sweet and, I have some at home, probably 800 or 1,000 pounds that I have had for eight years. It is candied and hard as maple sugar and I cannot see why it would not be good. I have fed it a time or two in the spring and it looks to me as though there would be more carbon in it than in granulated sugar and I think it would stimulate more, come nearer honey than anything else I know. But it should not be fed for winter stores.

THE PRESIDENT.—We are all aware of that.

MR. KILDOW.—It would bring dysentery, but for spring feeding I think it is pretty good stuff.

QUESTION.—What is the easiest way to stimulate brood rearing, that is, a simple way to feed?

THE PRESIDENT.—Does any one care to answer that, the simplest plan to feed for brood rearing?

MR. KILDOW.—I made two wooden troughs, put them back into the orchard and I put about one-fifth honey and the other four-fifths water, and let them go to it.

THE PRESIDENT.—How far away from your apiary?

MR. KILDOW.—About 80 to 90 yards, probably.

THE SECRETARY.—Then, Mr. Kildow, do not the strong colonies get more than the weak ones?

MR. KILDOW.—They need more.

THE SECRETARY—Will the weak ones get their share?

MR. KILDOW.—They get their share in proportion to their strength.

THE SECRETARY.—Sometimes the weak ones have not strength to fly from their hives.

MR. KILDOW.—Well, they will die then.

THE PRESIDENT.—Mr. Frank Bishop, what have you to say on this question?

MR. BISHOP.—Mr. Kildow's method is as good as any. I know that it is very little work and when you have colonies that are so weak that they cannot get enough to do them any good, I think it would be better to resort to some other method of feeding those weak fellows outside of what we would use for feeding the strong or even the normal colonies. I never have had much experience in this stimulating feeding, because I never practiced very much of it. I have fed a few weak colonies that I thought really needed stimulating more than a normal colony would, in order to get them ready for the honey flow, but when I did that I would feed daily through a feeder and feed a small amount each day to colonies that were at all weak. That is all the experience I have had in regard to that stimulating feeding.

MR. TYLER.—I have fed some in the spring of this feed, quite a good deal of it, set it out as Mr. Kildow does, but I used to set my feed soutwest from where my neighbor was located. I was out there one day and after setting out the feed and watching the bees I found that they were coming from the neighbor. My uncle has a little apiary there and I was feeding his bees.

MR. DADANT.—I was looking for some such statement as that. That is the trouble with feeding out of doors. We not only feed the strong colonies, colonies that have plenty, but we also run the risk of feeding our neighbors' bees. It is all right to be charitable, but I think neighbors should be charitable to their bees and we ought to be to ours.

Strong colonies that have plenty of capped honey do not need feeding, but if you wish to increase the laying of their queen in times of scarcity, just scratch some of the cappings of the sealed honey in their combs and they will take it up and feed more of it to the queen than they would have done otherwise and this will increase her laying. Whenever the bees handle honey they feed the queen more. That is why, when the bees make honey in the field, the queen is more apt to increase her laying, for if bees have plenty of food the queen will get more and therefore she will lay more. Weak colonies I think ought to be fed warm food. Not long ago we gave in the Bee Journal a very interesting thing, perhaps some of you have not read it. M. B. Bonnier, the same man who wrote on the production of honey dew,

happened to see an incident within 100 yards of his apiary, a car of sugar was broken down and a great deal of sugar spilled on the ground and the bees went to some watering spouts not far away from there, to get water, then went to the sugar, diluted the sugar and brought it home.

THE PRESIDENT.—And yet some people say bees do not have any intelligence.

MR. BISHOP.—I should like to add something in regard to Mr. Kildow's method of outdoor feeding. My brother and I live next door neighbors and we have about all the bees in that section of the country, there are but very few colonies outside of our own within a distance of some miles. Consequently, when we feed out of doors we do not feed any other than our own bees. Mr. Dadant says he thinks it is a good idea when he looks into the top of a hive in the early spring, to scratch the honey to make it leak. Well, my first and second trips in the spring, when I see what shape they are in, lots of times there is an abundance of honey, and it looks as though the larva were not very well fed. I take a knife and scrape the face of this honey on several frames and they take it right up into the brood nest, and I think that is a good idea, because you can do that without taking it off and it is stimulating. I think it is a good plan. I frequently do this.

MR. KILDOW.—The question has been raised about the strong colonies getting too much. Let them get too much; take a frame from them to feed the weak, do not have any weak colonies, you will not have any weak colonies if the honey is plenty. When I feed, I feed the syrup warm and I put it in a trough. It is just as warm as though I would take it off and I get pretty lively bees after it.

MR. TYLER.—Lots of times, when I find an exceptionally weak colony that needs feeding; I take honey from a strong colony to give the weak colony at the side of the brood nest.

THE PRESIDENT.—Doolittle used to dilute his honey and warm it and had a special apparatus, a pan with a lot of fine holes in it that he used to fill the comb with. He put two of those in an eight frame hive.

QUESTION.—Has any one ever used bottle feeders in the portico of a hive?

MR. KILDOW.—The paper box feeder and the trough are the only things I have ever used.

THE SECRETARY.—I asked that question to know whether anybody else had used it. I have used them and I do not like anything better. I can go and feed a weak colony and the rest will attend to their own business. Just as soon as I go out from my house door I can see when the bottles are empty.

MR. KILDOW.—If I had a bee yard like yours, where I could see the hives' door from my own door, I would probably do that.

QUESTION.—Can bees eat candied honey?

THE PRESIDENT.—I have had some candied honey in the hive, but I was never very successful in having them take it out or use it. Possibly the reason was that there was other honey coming in. Really I do not know whether a bee can eat candied honey or not. I suppose they can if they can eat candied sugar.

MR DADANT.—We have often fed bees with candied honey laid upon the combs.

MR. TYLER.—Why should not that be the easiest way to feed?

MR. DADANT.—Honey is so high priced that in the spring the bee-keeper has not any to spare. But if he has plenty and he knows he has to keep it over, feed it to the bees, certainly.

THE PRESIDENT.—Then in sugar there is a great deal of waste. The crumbs fall to the bottom and are wasted.

MR. DADANT.—There are occasionally crumbs of granulated honey; however, the moist weather will help that.

THE PRESIDENT.—Then there is another thing. If you put in a cake of honey or sugar, and you have your board sealed down, you have a great deal of moisture, possibly the water condenses there and makes quite a mess and you will have it all over your bees if you are not careful. It must be exactly right.

It is now 12 o'clock and I think it would be well to adjourn until 1:30 p. m.

TUESDAY AFTERNOON SESSION.

The meeting was called to order at 1:30 p. m. by the President.

THE PRESIDENT.—We will now have the report of the State Inspector of Apiaries.

EIGHTH ANNUAL REPORT.

To Hon. Charles Adkins, Department of Agriculture:

In submitting my eighth annual report of Apiarian work I wish to state the conditions of bees in the various part of the State.

Last spring word was received that foul brood existed in several counties in the southern part of the State. These localities were looked after and all reported to be cleaned up as far as known.

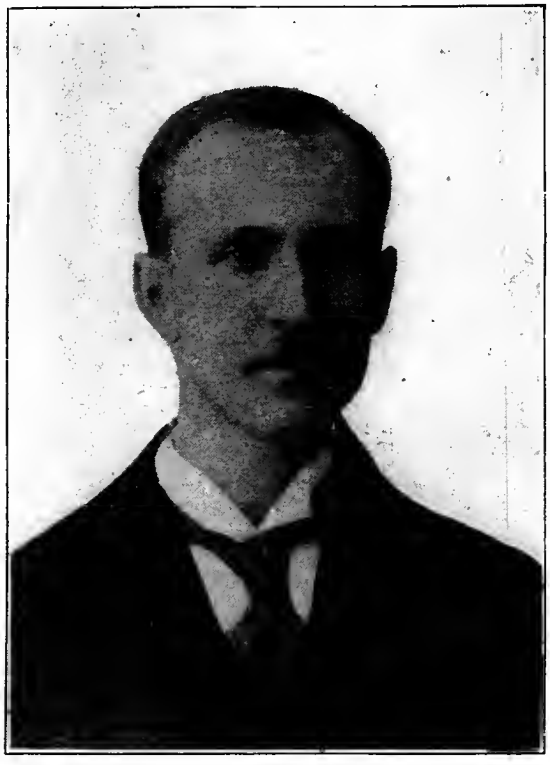
The drought in this section practically cut out all surplus and it was feared feeding would be necessary, but timely rains brought on the fall flowers, so bees in general gathered enough for winter.

Logan County and vicinity seem to be having an epidemic of E. F. B. There are few commercial bee-keepers here; the majority of the bee-keepers have from one to twenty colonies and very little pains has been taken to bring the bees up to the standard. All that seems necessary is to have bees in a hive. Little attention is given the bees in this locality and conditions are very unfavorable for wintering. Much will depend upon the kind of winter we have as to the condition of these bees next spring.

In the central part there have been two outbreaks of disease both caused by shipments of bees from infected territory. Of the localities found diseased last year all are clean or well under control with one exception. At Champaign there have been so many bees brought in and so late in the season, that it was impossible to make a complete clean up before the season ended. There has been no new cases at Paris. Douglas County still remains entirely free. We are getting rid of the box hive man. In the locality north of Peoria and up to a

Date.	Number colonies.	Number aparies visited.	Number aparies diseased.	Number having A. F. B.	Number having E. F. B.	Number days.	Expense.	Supplies and incidental.	Per diem.	Number destroyed.	
1917											
November	.....	.....	.....	.....	.....	4	$ 8 79	.....	$ 16 00	.....	By inspector.
Convention work and office work.											
1918											
March	103	3	3	3	.....	7	48	$ 2 31	28 00	.....	
April	.....	.....	.....	.....	.....	3	.....	2 41	12 00	.....	By inspector.
Office work and instructing deputies.											
April	464	23	9	8	1	10½	11 90	.....	42 00	.....	By deputies.
May	119	7	3	3	.....	12	16 78	2 00	48 00	.....	By inspector.
May	2,145	135	46	33	13	43	66 16	.....	172 00	.....	By deputies.
June	150	4	3	2	1	10	12 07	2 00	40 00	.....	By inspector.
June	1,580	108	47	19	28	38½	49 55	.....	154 00	.....	By deputies.
July	965	22	4	2	2	10	18 92	2 92	40 00	.....	By inspector.
July	1,759	140	35	33	2	42	87 88	.....	168 00	18 with owner's consent.	By deputies.
August	80	5	1	.....	1	18	26 59	1 60	72 00	.....	By inspector.
Instructions at State Fair.											
August	1,765	116	35	19	16	38	67 40	.....	152 00	.....	By deputies.
September	126	7	4	4	.....	10	20 13	2 00	40 00	2	By inspector.
September	135	12	4	3	1	5	6 66	.....	20 00	.....	By deputies.
October	60	1	1	1	.....	2	3 29	16 00	8 00	.....	By inspector.
Total	9,451	583	195	130	65	254	$396 60	$31 23	$1,012 00	20	

line drawn through the northern part of Bureau County appears to be the best in the State. Disease here seems to be under control. About half an average crop was secured and bees are in good condition for winter. Reports from the Aurora district state that bee-keepers extracted too closely, thinking there would be a fall flow which failed, and bees will go into winter quarters generally short of stores. Very few reports of disease in this locality.



A. L. KILDOW,

State Inspector of Apiaries.

In Chicago and vicinity bees are reported to be in good condition. Some American foul brood is found, but constant education by inspectors and literature have had their effect that bee-keepers are beginning to understand how to help themselves. About half a crop was secured.

The north part of the State appears to have fared the worts of any. Reports say that bees in general barely made a living and in order to bring them through the winter, feeding will be necessary. Very few reports of disease from this locality.

Early last fall I wrote a number of county advisors asking their cooperation in supplying bee-keepers in their territory with sugar for feeding. Several replied saying they would do all they could to help the bee-keepers.

All requests for aid have been promptly attended to.

A few notices were received from Dr. E. F. Philips of the Bureau of Entomology, Washington, D. C. too late to investigate.

THE PRESIDENT.—The report is open for discussion, or any questions you may have to ask of Mr. Kildow. Is there anything you wish to ask Mr. Kildow with regard to inspection?

THE SECRETARY.—You never got to Pleasant Plains, did you, Mr. Kildow?

MR. KILDOW.—No, I never had a call from there.

THE SECRETARY.—Miss Becker said she did not know but there was foul brood among her bees, and I told her to call on you.

MR. KILDOW.—We tried to go everywhere we could think of; we answered all calls promptly. Of course there may be places in the State and likely are, where we did not know anything about it. Wherever we get a call, we go there, and we have gone back a time or two, sometimes twice, a good many places, and I think once or twice the third time.

THE SECRETARY.—Miss Becker did intend to sell her bees, but made up her mind to keep them.

MR. KILDOW.—I got no word from them.

THE PRESIDENT.—Mr. Kildow, do you think diseases are on the decrease in the State?

MR. KILDOW.—Well, so far as we have been over the ground I think that disease is on the decrease, and especially it is on the decrease where they know how to handle it when they see it.

THE SECRETARY.—You think then the bee-keeper is becoming better educated?

MR. KILDOW.—They are becoming better educated, because we come to many places where they understand it and help themselves. I get letters from where they do not know how to work it, but when they understand it they go after it without waiting for us. Here and there parties do not know anything about it, that is where it gets them; there is where we get our calls. Lots of questions come by way of Washington. We have a few parties in Illinois, if they live 100 years they will never know anything about it.

MR. DADANT.—Are there a large number of box-hives in the State?

MR. KILDOW.—There are a great many. I do not care so much about the box-hive, they are not as great a detriment as a frame with an ignorant man behind it. The form of hive, after all, has not given us as much worry as the green man.

MR. DADANT.—Maybe because there are so few of them educated to the modern hive.

THE PRESIDENT.—You mean it is exactly that kind who use the modern hive, but it is of no use to them.

MR. KILDOW.—They buy frame hives and put bees in them, but if they keep bees forty years they never would make a success.

MR. WARBER.—Do you make these visits upon requests, or upon your own initiative?

MR. KILDOW.—Both. It is supposed that we go upon request, but it is left so that if I think it necessary I can go.

MR. DADANT.—What is the most spread, the American or European, in Illinois.

MR. KILDOW.—I think at the present time there is a little more European.

MR. DADANT.—Which is the easier to eradicate, in your opinion?

MR. KILDOW.—I would rather work with the American, because when I treat American colonies I feel satisfied that I am done. It is not so with the European. As I understand from the deputy in the southern part of the State, there is a great deal of re-queening done this summer, so we will be in shape next spring though they do not use enough care. If they do re-queen they will make a success.

THE PRESIDENT.—Gentlemen, you have heard the report of Mr. Kildow; what shall we do with it.

A motion that the report be received and placed on file was duly seconded and carried.

THE PRESIDENT.—The next paper was to have been by Hon. N. E. France, of Plattville, Wisconsin. It is impossible for him to be here on account of the illness of his son, and I am going to ask Mr. Dadant to give his paper this afternoon.

HONEY MANUFACTURE.

(By C. P. Dadant, Editor of the American Bee Journal.)

In the "Poplar Science Monthly" for June, 1881, in an article entitled, "Glucose and Grape Sugar," Prof. H. W. Wiley, the erstwhile United States Chemist, wrote as follows:

C. P. DADANT,
Editor of the American Bee Journal.

"Bees eat glucose with the greatest avidity; or rather they act as funnels by which the glucose is poured into the comb. For it is quite true that honey made by bees which have free access to glucose differs scarcely at all from the glucose itself. But the quantity of honey which a bee will store away, when fed on glucose, is truly wonderful. This gluttony, however, rapidly undermines the apiarian constitution, and the bee rarely lives to enjoy the fruits of its apparent good fortune. In commercial honey, which is entirely free from bee mediation, the comb is made of paraffine, and filled with pure glucose by appropriate machinery."

Commenting in a jocular way upon this statement of his, in the American Bee Journal for June, 1882, Professor Wiley wrote:

"This last clause which, when written, was meant for a scientific pleasantry, came near throwing the whole bee world into epilepsy. It appears that persons who devote themselves to Bee Journals undergo a cerebral inspiration which renders them incapable of seeing a joke. The only point which they can appreciate is the sting of a bee."

Professor Wiley also made the statement that this joke of his had been published in "nearly every paper in the country." He did not seem to appreciate the fact that his "scientific pleasantry" was taken in earnest and that the masses fully believed on this testimony of his, that honey in the comb was then manufactured "by appropriate machinery."

At the present day, after 36 years, there are still people who believe in the truth of this statement. Few persons can conceive the great harm it has done to the sale of bees' honey. The invention of that story was contemporary with the beginning of the use of comb foundation. Honey in sections of perfect shape, well sealed and attractive,

being a new product, was at once connected by the consumers with the "appropriate machinery" mentioned by the most capable American chemist and scientist, investigator of all sorts of adulterations who shortly after became official United States Chemist.

It is true that, since that time, Dr. Wiley was the author and introducer of the "Pure Food Law" which has helped stop adulteration and has surely done a lot of good in preventing the sale of adulterated honey and in giving the public greater confidence in products put upon the market with positive guarantees. But we must beware of allowing any more slurs to be thrown upon the legitimate production and sale of good honey.

During the present sugar conservation campaign, the Food Administration of the United States published a list of the industries requiring the consumption of sugar and gave out regulations concerning these industries.

Among the different requirements we find the mention of "sugar for feeding bees" for which full allowance was made. The next line mentioned "sugar for honey manufacture." This attracted my attention, especially as several bee-keepers wrote to the American Bee Journal, saying that a number of their customers had noticed the Food Administration's mention of "honey manufacture" and stated that this was a plain acknowledgement that sugar was being used to "manufacture honey" and that it was preposterous for bee-keepers to deny doing it.

So, in the American Bee Journal for October 1918, among the editorials, page 335, we published the following:

"*Sugar versus honey.*—We are informed that the Food Administration is allowing 100 per cent of needed sugar for feeding bees that may be short for winter, and 50 per cent of normal supply for "honey manufacture." Inasmuch as the adulteration of food is strictly prohibited, we can see no earthly reason for allowing any sugar for artificially manufacturing a product which cannot under any excuse be called honey, even if it contains 50 per cent of real honey. There is evidently a misapprehension on the part of the Food Administration as to what constitutes honey."

This article was noticed by the men in charge of the food question at Washington and the following letter was received by me:

WASHINGTON, D. C., *October 4, 1918.*

Mr. C. P. Dadant, Editor American Bee Journal.

DEAR MR. DADANT In the American Bee Journal for October, we have read with unusual interest your comments on "The Sugar Situation" and on "Sugar versus Honey." Although we note the general approval of bee-keepers toward the distribution of sugar, I wish to comment more particularly on your remarks concerning "Honey Manufacture."

I have taken this matter up with our Sugar Department with these results: We are informed with regard to the manufacture of honey that there are a number of substitute honeys available, made from corn sugar or corn syrup with other ingredients to give a honey flavor. This is the class of trade being held down to 50 per cent of their last year's sugar requirements. This 50 per cent allotment should in no degree be considered any reflection on the honey industry or on the production by patriotic bee-keepers of the largest honey crop possible.

Please let me assure you that the Food Administration welcomes all frank opinions and suggestions for securing best results with the least disturbance of agricultural and

trade conditions We shall be glad to hear from you and to interpret for your publication any matters which are not perfectly clear in your own mind or on which bee-keepers desire further information.

Yours for the Fourth Liberty Loan,

U. S. FOOD ADMINISTRATION,
EDUCATIONAL DIVISION,
BEN S. ALLEN,
Director.
(Signed.) D. F. BURCH,
Farm Journals Section.

To the above letter I replied as follows:

HAMILTON, ILLINOIS, *October 9, 1918.*

Mr. D. S. Burch, Farm Journals Section, Food Administration, Washington, D. C.

DEAR SIR: I am in receipt of your letter of October 4 and thank you heartily for the attention you give our interests on the subject of "honey manufacture."

Permit me to make a few remarks and suggest that the words "honey manufacture" are misleading. The artificial mixtures of cheaper sweets with honey give a sweet which cannot be properly called honey any more than you can call "maple syrup" a mixture of half glucose and half syrup. Those mixtures are entitled to the name of "glucose mixtures." But of course they would not sell so readily if they did not bear the name of the better ingredient. If such names are permitted to be used, many things may be sold under the name of a product which they would perhaps contain in infinitesimal quantity. So I would suggest that the Food Administration call the product in which honey is mixed by the name of "honey mixture," which will deceive no one.

May I take a few minutes of your time to explain why the bee-keepers are provoked at the suggestion of making honey out of sugar? I have to go back to June, 1881, when Dr. Wiley, the erstwhile United States Chemist, made the statement, in the Popular Science Monthly, that "comb honey is made with paraffine filled with pure glucose by appropriate machinery." By his own statement this story was reprinted in almost every paper in the United States. When the American Bee Journal, then published in Chicago, demanded of him the proof of this statement, he replied at length, in the June 14, 1882 number, that what he had written was "only a scientific pleasantry." This has done incalculable harm to the sale of honey.

Thus you may see that the bee-keeping fraternity is very much opposed to the statement, by such authority as the Food Administration, of actual "honey manufacture," especially when the said Administration only means "mixtures of sweets containing more or less honey."

Perhaps you may think that we put too much importance upon this point. But if you were to investigate, you would find out that it is a constant struggle, owing to Dr. Wiley's innocent lie, to convince the people of the purity of honey. So, when such a leading organization as the "Food Administration" countenances in a very apparent way "honey manufacture," they give fresh cause for suspecting the healthiest and best of all sweets.

I hope you may succeed in getting the Administration to change the word "manufacture" into "mixture."

If you have had the patience to follow me this far, I wish to thank you for your courtesy.

Yours truly,

(Signed.) C. P. DADANT.
Editor American Bee Journal.

The following letter was then received from the Food Administration:

Mr. C. P. Dadant, Editor, American Bee Journal.

DEAR SIR: Your letter of October 9 relative to "honey mixtures" has been received and read with much interest. I am taking this matter up with our sugar specialists and calling particular attention to your point of view in this matter, which doubtless reflects the opinions of bee-keepers generally. Assuring you of our desire to receive further suggestions at any time, I am

Faithfully yours,

UNITED STATES FOOD ADMINISTRATION,
EDUCATIONAL DIVISION,
(Signed.) D. S. BURCH.

I do not know how many of our beekeepers appreciate the possible harm that the official publication of "honey manufacture" recognized by the Government may do to our industry. Just at present, when honey is exceedingly scarce, there is a demand for it nevertheless. But we must bear in mind that, unless we see to it that only pure bees' honey may be legally sold under the name of honey, there will be more or less hesitancy on the part of the uninformed consumer in buying honey. The sale of honey would be *limitless* if every consumer could have positive knowledge of the purity of the article offered to him.

This country is not the only one where there is a misunderstanding concerning "pure honey." In France, quite an excitement was caused among bee-keepers by the permission given by the French Government to dealers in sweets to sell a preparation containing only a small proportion of real honey mixed with corn glucose, under the name of "miel de fantisie," which name may be correctly translated as "fancy honey" or "fantasy honey." The name leaves the impression on some consumers that this so-called "fantasy honey" is really of better quality than the pure article.

Of course it is to the interest of the man who makes it his business to mix high grade goods with inferior products to give the mixture the name of the better product. But it behooves all lovers of the truth to insist on giving each article its proper name. We are pecuniarily and morally interested in not allowing any "mixtures of honey" to be sold under the name of honey. So we should insist with the Food Administration that they either refuse to permit "honey manufacture" or that they demand that such articles be called only "honey mixtures."

I believe that our bee-keepers' associations are the ones to take up this matter with the Food Administration, asking for explicit and positive regulations.

Mr. President, I don't know wheter it strikes your members as strongly as it does me, that this matter is of great importance to the bee-keeper. I have many times, in offering honey, been confronted with the statement, how did they know the honey was pure? Glucose was cheap, and a man like the United States Chemist, Dr. Wiley, said it was manufactured; that they manufactured the comb out of paraffine, that they put the honey in by machinery. He never denied it, simply let it stand and ridiculed the bee-keepers, said they could not see any point except the sting of a bee, so I think we ought to let it be known that we do not approve of honey adulteration and I think the Government should be informed that it is entirely out of place to permit openly honey manufacture; and that it is manufactured with the perimssion of the Government and is a mixture of glucose or some cheaper compound under the name of honey.

THE PRESIDENT.—Has any one anything to say in the way of discussing the paper?

THE SECRETARY.—I think that is a very valuable thing to go into our report.

MR. TYLER.—An incident that occurred recently carries out Mr. Dadant's point very clearly. A food administrator—I suppose that

is what you call him—at New Holland, said to me one morning, "How do you go to work to make—I have forgotten how many pounds—of honey out of so many pounds of sugar?" I asked him what he meant and I found that he had got hold of such literature as Brother Dadant has referred to, being a food administrator, and had been told that we as honey producers were entitled to so much sugar in the spring for feeding purposes, and he wanted to know how we would go to work to make so much honey out of so much sugar. He was a learned man; he was from Holland and he was sincere in it.

THE PRESIDENT.—He was misled by the Government.

MR. TYLER.—Yes, he was. It took me quite a little time to explain to him how we could feed out sugar to the bees and that at the time of the honey flow we could get the honey. He had the impression that we were going to manufacture so many pounds of honey out of so many pounds of sugar.

THE PRESIDENT.—Well, the members of the Association that had charge of the booth at the fair grounds, or some of the exhibits, will literally bear out what Mr. Dadant has said about the question of artificial honey. We used to have some very nice comb honey in sections in the center of the booth, and the principal thing that one of our men had to do out there was to tell the people that it was not manufactured, that it was impossible to manufacture comb honey, and he was kept busy every day all through the fair. He can testify to that himself.

Some of the older men and women have read this article, that the Government chemist had handed out in rather a jest, but which, as such jests prove to be, is always dangerous. That reminds me of another jest that has been handed out in the last four or five days about an experiment in the Naval Department, of feeding "flu" germs to some soldiers and sailors and they got fat on them. That appeared in every paper in the United States last week. There is not a speck of truth in it, so far as it reads, but there has been an experiment going on to give the men a serum and then give them the germ, and the men did get fat because they were immune, due to the serum.

Anyone else have anything to say?

MR. DADANT.—While Prof. Wiley has done a great deal of good by the Pure Food Law, and that has been done in the last fifteen or eighteen years, he did a great deal of harm by that thoughtless joke in this article. Evidently he found out that people would swallow anything. Mankind will swallow the most wonderful things, and the more impossible they are the better they like them, the oftener they repeat them. We see that everywhere. He simply made an attempt at a joke, said that we manufactured honey with proper machinery, made the comb, put the honey in; and then he spoke about the manufacturing of eggs in the same article, I understand, and those eggs looked like hen's eggs, only they would not hatch. I don't know whether there are people who still believe that they manufacture eggs, but I know positively that there are people who believe that there is manufactured comb honey. There is an easy way to convince a person who is willing to listen to the fact that honey is not manufactured.

I have given that out a great many times, and I think it is a good idea to give it, because you can convince the people who ask you.

You know there are no two leaves in the woods that are alike. You can spend a whole day in the woods and pick leaves that seem almost alike, but there are differences. There are not two birds' nests alike, and there are no two combs of honey alike, because they are made in the natural way. But take manufactured articles and you can have tens of thousands, hundreds of thousands or millions, all alike; they are made by machinery. Now, if comb honey was made by machinery, the combs would be all alike; but if they look at those sections they can convince themselves there are no two alike, and they cannot have been done by machinery, but they must be done by the insects themselves. That is the most convincing argument you can get.

Another thing, we exhibit foundation and say, that is as far as human genius can go in the manufacture of honey, the bees have to do the rest. If a man says that that part is manufactured, we explain to him how we make it, and then explain how honey comb is made. He then knows that there is no such thing as manufactured comb honey; but the people on the street do not know, and many would rather believe that the people are dishonest than honest. Oh, yes, there is lots of swindling in this world, and they are only too ready to believe that what is sold for honey is nothing but glucose. And when the Food Administration gives out a statement about honey manufacture, they are creating a wrong impression. "Mixture of honey," or "products containing honey," that is all right, but they must not call it "manufactured honey."

MR. SEASTREAM.—I should like to tell a little story in connection with what Mr. Dadant said. I was taking care of the bees of a friend of mine, Mr. Baxter, Dr. Baxter's uncle. He had a hired man and this hired man was after me time and again with the question, "What do you feed them anyhow?" I told him we did not feed them unless they were starved, then we fed them, otherwise we did not feed them at all. He was after me several times about the same thing and he walked away from me disappointed when I told him the truth. So one day I came over and he asked me the question again, and I said, "Well, I will tell you, Ed, if you won't tell it to anybody I will tell you the truth." I said, "We feed them on cold cooked potatoes and sour milk, and they make honey on that feed," and he walked away from me satisfied. I could see how satisfied he was.

THE PRESIDENT.—That sounds ridiculous, but out at the fair the last time I had a card telling what seven ounces of honey was equal to in food value, most of you are familiar with it. It was put out by Dr. Miller, and in that was a quart of milk and so many ounces of beef steak and so many bananas and oranges; a perfectly intelligent appearing man came up to Mr. Withrow and asked, "How in the world do you put all that together and make honey?" It was not a joke, the man was sincere about it.

MR. SEASTREAM.—I. have something like two hundred hives of bees but I have had more trouble about answering questions, trying to convince people that I have honey for sale, than all my work amounts

to. I have to explain it for five and ten minutes sometimes. They say, "We want to know, because we want honey that is pure; we do not want to buy So-and-So's honey, because that is manufactured honey, and of course that will probably mean they do not want my honey, because it is manufactured. But the belief really, I think, is that we are not exactly honest, especially with the extracted honey, and every bee-keeper, as Mr. Dadant says, has to combat that idea very vigorously.

THE SECRETARY.—I have a big sign up "Extracted Honey for Sale," on one of my pecan trees in the avenue near the big gate, and every once in a while somebody stops in and wants to see if we have the pure honey. I take them in and show my bees, and show the extractor and then I show them the frames that have been extracted from, and tell them that we can put them in the hives again and produce two or three times as much as we otherwise could.

MR. DADANT.—I had a friend who is now dead, in St. Louis, who sold 10,000 pounds of honey for me. He was a man of great acquaintance, member of a great many societies, secretary of two or three of them; he was not a business man, just a secretary of associations. He had some leisure and he would order honey from me in 10-pound pails over and over again. I said to him one day, "How do you manage to use so much honey, you do not keep a store, how do you sell so much?" "Why," he said, "there is no trouble at all. If I were trying to sell whiskey or cigars, lots of people would say: "aren't you ashamed to offer that kind of stuff for sale?" But the only thing people ask is, "Is it pure?" "Yes, I know it is pure." "All right, send me a bucket." There is not trouble at all in selling it. Why? Because they have confidence. The minute they suspect it, they ask, and if there is any doubt, they do not want it, they would rather buy the glucose. If they tasted honey and glucose side by side, they could detect it. So you do not want the Food Administration to increase that mistrust by advertising, allowing sugar for honey manufacture, that is a great mistake, and I think that our Association ought at least to notify the Food Administration that they do not approve of that. Let them know that we do not think it is the right thing to do, to offer sugar for honey manufacture without explaining that they simply allow it to manufacture sweets that are a mixture of honey and lower sweets.

THE PRESIDENT.—Do you make that in the form of a motion, that there should be a resolution?

MR. DADANT.—I think that we ought to write a resolution to that effect.

THE PRESIDENT.—I will ask Mr. Dadant and Mr. Kildow to offer a resolution in the morning.

MRS. KILDOW.—Just another word along the same line. One day Mr. Kildow and I were in the store where they were handling our honey and the proprietor said, "Have you any more of that honey, I would like some more." Mr. Kildow said, "You have still some on your shelf." And at that time the Baptist minister stepped up and took up one of the bottles of honey and said, "I don't suppose it is pure." I called the minister by name, and I said, "Do you suppose

we would sell anything but pure honey?" And he said, "I will take one." The next time I saw that minister he said, "That honey was all right," but even he, with the judgment he had, was doubting it was pure honey.

THE SECRETARY.—I think, Mr. President, that we never have adopted a plan that convinced so many people that honey cannot be manufactured, as our show at the State fair.

MR. DADANT.—I think it was really worth while.

The following resolution was submitted next day by Messrs. Dadant and Kildow and was unaminously adopted:

WHEREAS, The artificial manufacture of sweets containing honey, under the name of "honey manufacture" has been officially recognized by the "Food Administration;"

WHEREAS, The laws forbid the naming of any mixture of ingredients by the name of the better product contained in it;as, for instance, it is forbidden to call a mixture of butter and margarine by the name of butter; therefore,

Resolved, That the Illinois State Bee-Keepers' Association protests against any mixture, containing honey in part, being called by the name of honey, or honey manufacture. Such mixture should be called by the name of the cheapest ingredient it contains.

Resolved, That nothing should be permitted to go under the name of honey which is not strictly pure bees' honey, gathered from the flowers in the fields. Any so-called manufactured honey is only adulteration.

THE PRESIDENT.—That is all the papers for this morning and we will open the question box, Mr. Heinzel.

QUESTION BOX.

QUESTION.—Would shortage of stores cause the large numbers of dead bees, otherwise looking healthy, lying in front of hives in spring, just before white clover flow?

MR. HEINZEL.—I would say, yes.

THE PRESIDENT.—If they were out of stores, I would say, yes, but simply shortage of stores, I would say, no. Of course there might be a lot of dead bees in front of the hive in the spring, if there had been a large colony, that would simply have died from old age.

MR. DADANT.—Do you think they would die from old age in front of the hives?

THE PRESIDENT.—Sometimes, it depends on weather conditions a little.

MR. HEINZEL.—I suppose he found them after they had been cleaned out of the hives. I have found lots of them on the bottom boards, hanging on the bottoms of the frames. I have had a dozen different calls from parties in the last four or five years, asking me to come and see what was the matter with their bees. I would see them lying all around, had life enough yet to move; as soon as I would look at them I would see that they were starving. With a cold spell coming on they could not get out, did not have enough to eat.

QUESTION.—A part of my clover extracted honey has fermented slightly; about three-fourths of this was sealed when extracted. Is this unusual?

MR. KING.—I think that means that the fermenting started before it was extracted.

MR. HEINZEL.—No, that was after extraction.

THE PRESIDENT.—That would indicate that it had fermented before it was extracted.

MR. JEFFRIES.—Yes, I had some that had fermented.

MR. DADANT.—Did it burst the caps of the cells?

MR. JEFFRIES.—No.

MR. KING.—I live in that neighborhood and every once in a while I find one certain colony in the yard, that the cells will look a peculiar color; if you look in, it is all foam and fermented. I lay it to some kind of weed that they had been working on. That honey does not ripen right. It generally comes in white clover, I don't remember what time, whether in the first part or latter part of it.

THE SECRETARY.—Might have been some candied honey in there.

MR. DADANT.—When I was around Syracuse, New York, we went to visit Mr. Doolittle, and on the way back we visited a bee-keeper whose name has escaped my memory just now. He told us for three or four years all his honey had fermented in the cells after it was sealed, and this last year he had resorted to very radical means. He had changed all his combs, and put in comb foundation. He said he had done away with it. That would suggest what our Secretary said now, that perhaps it is due to some old honey in the cells, that there are germs of fermentation in the cells and the honey ferments and bursts the cap. When the cap looks a little odd, looks whitish, then raise it and you will find that it is foaming under it. As a rule that honey is thin. We have had honey do that, and I am under the impression that the bees do not always know when honey is ripe enough and if the crop is very thin and very watery and the sun not very warm, they may seal honey that is not very ripe. Ripe honey may be unsealed, and unripe honey may be sealed. As a rule, ripe honey is sealed. But we have to be careful of our honey, and if there is any honey that ferments at the time of extraction, I think the only way to do is to follow Mr. Frances' method, heat it slowly right after extracting. We thus evaporate a lot of moisture and probably kill the germs of fermentation. It is very difficult to do that and not destroy the essential oils that are in the honey and that flavor it. Those essential oils are very easily evaporated and you spoil the taste of your honey, so it would be a great deal better if we could keep our combs in such a way that they will not have any old honey in them. This bee-keeper whom I mentioned in the Bee Journal had practically all his honey fermented; he was in a white clover region.

THE SECRETARY.—I had some honey one year that I was delayed about extracting, and there came cold weather, and I had it mostly down cellar, where we have a furnace, and always kept fire down there, so that I could extract any time during the winter, but last year I had several hives that I did not get extracted until fire in the furnace was out, and moisture enough came there so that it candied, and those three or four hives, after the bees filled them this summer, I found several of them that had a little candied honey in them and that honey fermented.

MR. KILDOW.—I have had honey in new sections ferment. How do you account for that?

THE SECRETARY.—I have seen that when leaving it on hives over winter.

MR. KILDOW.—That is not a common occurrence. I do not know what causes that.

THE SECRETARY.—I should like to know if there is any way of getting the effect of the candied honey out of the comb?

MR. DADANT.—Have the bees clean it out.

THE SECRETARY.—They would clean it but they would leave particles.

QUESTION.—What is the best method of having combs cleaned up after final extraction?

MR. KILDOW.—Put them out of doors and let the bees clean them.

THE PRESIDENT.—Don't leave them out for the bees to get at. I have ruined many perfectly good combs.

MR. DADANT.—Yes, they cut them up.

MR. KILDOW.—I find by putting combs on top of the hives, that if you are not careful, they will go up in there and you have to run them through the escape to get them back out and they leave a lot of honey there then.

THE SECRETARY.—They stay through the winter in some instances.

MR. KILDOW.—Putting them on top, I have to re-clean. I do not like that, I tried it.

MR. BISHOP.—I have tried this thing of putting the combs back on the hive for quite a good many years, and I have put an excluder on, put on one or two sometimes, that would stop up three or four or five and the bees would go up there, clean those up nice, but they would deposit a lot of honey, instead of taking it down, in the ordinary hive bodies, they would start to cluster after that, and then you would have to put on an escape to get those bees down; when the weather got a little cool, they would just hang in that cluster and it would take several days to get them down. They would cluster there instead of going down through the escape; as a rule you would not have all your honey out of your frames, you would have quite a bit scattered. For the last two years I have tried this business in my final extracting. I would take my supers at night, and set them out near the yeard and stack three, four, five or six on top of one another, put about one-half inch strips in at the corners between each one of those bodies, then I would take the covers off, the next morning I would let them all have a good time. If they did not get them properly cleaned the first day, I would leave them up the second day, finally the next day, they would all be back in the hives. I would take out the frames and examine them, and I never had frames cleaned up nicer in my life than last fall and this fall, and they never hurt the combs at all. I got out about 80 bodies along this fall after final extracting, and I never had a frame that was pinked in the least, and they were perfectly dry and I put them up in nice shape. That has been my experience, and I tell you it saves a whole lot of work, and then you get the honey all out.

THE SECRETARY.—I should like to ask Mr. Bishop why he tiers them up that way.

MR. BISHOP.—Because it does not take so many stands to set those supers on; as long as you do not have to get them so high that

it is uncomfortable to get at them. You can build about three or four or five high, instead of having so many stands, it is less trouble.

THE SECRETARY.—I scatter mine all over the yard, put them out any day when it is nice weather. If they do not clear them up in one day, I let them take two. I have never had a comb hurt yet.

MR. BISHOP.—The advantage is that it takes only one stand to set four or five hives on. One hive cover will cover this, and you have them all cared for at night. It takes less work and less care.

THE SECRETARY.—Let them stay until you get another good fly day, and get them away in good shape?

MR. BISHOP.—That is the idea.

THE SECRETARY.—If it gets cold weather they are more apt to stick there than to clear up any honey.

MR. BISHOP.—I do not wait that late. I get them cleaned up before we get that kind of weather.

THE PRESIDENT.—If they are old combs they do not tear them down so badly, but if they are new combs they will tear them to pieces. I was asked a few moments ago whether I put out few or many. I put out a great number, but the only time I had a real success I put out several on various hives, a few so late in the year that cold weather had set in. I had a little trouble getting the bees down as they would generally be on a frame or two, and I would always run those extra frames through the extractor.

MR. BISHOP.—I had quite a few new drawn combs last season and for the last two years, and I set those out with the old dark combs, and some of those where I had taken out frames and put on the sheets, they were drawn out nicely, went back together, and I never could find where I had a comb that was cut the least bit. I tried that two years and had very good success.

MR. HEINZEL.—I work the same as Mr. Bishop does, and I have good success with them, even new combs.

MR. SEASTREAM.—I have had considerable experience in regard to taking care of combs and getting them cleaned up, and as I produce mostly extracted honey, I have tried everything. I found that I had the best success when I would take, say two or three supers and pile them on a hive, and I never failed to have them cleaned out in 24 hours, and then I gave them another set and then keep on, let them clean them, go over the whole yard. When they have finished off, the combs are so clean they just bristle. Last fall I did not have them cleaned out at all, and this fall I never had honey granulate so quickly on me. I took some of it to the fair and it started to granulate right there. That is what I had for not having cleaned them out.

THE SECRETARY.—You are bound to have trouble with them next year if they are not cleaned out.

I never saw the time yet when my supers were all placed, scattered around that way and when the bees could get at them, but the bees would clean them out in one day. They would swarm around as thick as flies.

MR. SEASTREAM.—They do a good job, too, as a rule.

THE SECRETARY.—You can find one hive that will clean up two or three or four or five.

MR. SEASTREAM.—When you have them piled up on top of each other they are more or less damp. I never could get them so nice and dry.

MR. BISHOP.—You do not leave them more than one day?

THE SECRETARY.—I have had them over one or two hives where they would accumulate the honey, put it into certain cells and seal them over. You do not get them cleaned out; it is candied before the next year.

THE PRESIDENT.—Well, we will proceed to the next question.

QUESTION.—Is there any law on spraying in Illinois?

MR. HEINZEL.—I suppose the man that wrote this meant spraying for fruit bloom.

THE PRESIDENT.—Yes, we will take it as meaning that. To my mind there is no law in the State of Illinois against spraying. There is a law in some state, in New York.

MR. DADANT.—When I was President of the State Bee-Keepers' Association I had the task, with our Secretary, of going before the Legislature and offering a number of bills, and we succeeded in getting an appropriation; we also succeeded in getting opposed particularly by Senator Dunlap, who has 1,600 acres of apple orchards; when we went to him with our proposed anti-spraying law, that is, a law against spraying when the trees are in bloom: He said to us: "It is impossible for a large orchardist to wait until all the bloom is down before beginning spray, he must begin and he does begin, if he is sensible, after the main bloom is down, and then moves on until he is through. Apple trees do not all bloom at the same time, that is different varieties do not, but, if you have positive proofs, and can bring them, that bees have been actually killed or poisoned by the spray, we will consider your law, otherwise we will have to set it aside." Well, we had a great many hearsay cases, we had no positive proof, not one, of bees or apiaries suffering from the spray. There were cases, we were told, but nobody came forward with a statement that he had lost bees and that he knew it was from spraying, and so all we could do was to acknowledge that Senator Dunlap had the right against us, and he was the chairman of the committee who was to consider this matter of laws on spraying. Senator Dunlap said to us, "The sensible orchardist will not spray his trees in full bloom; a few of the dealers in sprays advised spraying in full bloom, but they have quit it because it is not the thing to do."

MR. KING.—In my neighborhood there is a party that has an orchard, not such a large orchard and they said the only time they are going to spray is when they are in full bloom. They know it will kill the bees and the intention is to kill the bees.

MR. DADANT.—I have an expression too strong for publication on that fellow.

MR. KILDOW.—That fellow will get into my way.

MR. RESSINGER.—Mr. King, did you ever notice any difference in your bees after spraying of the trees, did you notice any weakening?

MR. KING.—There never was any spraying done. That is, there was no spraying done after the trees had fairly leaved out. They always sprayed for San Jose scale and that is as far as they went in

my neighborhood. But this party has just come into my neighborhood and she wants to do all she can to get somebody to throw her out.

MR. RESSINGER.—I should like to ask some one in the Association what it will really do to a colony of bees.

MR. SEASTREAM.—I can answer that. In the state of Pennsylvania, where they were raising applies in an orchard, they started to spray their trees a little too early and at the time when I was working for this man, the hives were in fine shape, all of them, but after the bees went through this orchard and got the poison I could see here and there all through the orchard dead bees, and I noticed it then in the hives; the hives were so depleted that the brood could not be cared for, they would die right in the cells. When we discovered it, we put them in the kitchen and fired up the kitchen three or four days, and hatched them out in that way; a lot of the brood hatched but I believe that man lost something like 25 to 30 hives, that did not amount to anything during the summer. The bees were lost, so many of them, that they were some hives of six or seven combs full of brood and hardly half enough bees to cover them at the time. The spraying was done right at the time of the bloom.

MR. KILDOW.—Is it not considered that when you spray fruit trees in bloom with arsenate of lead, that it would poison any insect that takes it?

THE PRESIDENT.—I could not say for sure, but that is my understanding.

MR. KILDOW.—That is the understanding that we got, that when you spray with arsenate of lead during the bloom that it will kill the insects.

THE PRESIDENT.—It will kill the bees if it will take the nectar.

MR. DADANT.—Will they take the mixture.

THE PRESIDENT.—I don't know.

MR. DADANT.—Is not that generally mixed with copper? If it is mixed with copper it will have a taste that the bees will not touch.

MR. KILDOW.—That is hearsay. I would not vouch for that.

MR. SEASTREAM.—I want to say that I found scores and scores of bees under the trees.

THE PRESIDENT.—Do you know what the trees were sprayed with?

MR. SEASTREAM.—No, I could not tell you. It was something like twenty-two years ago.

QUESTION.—If, among twenty-five stands of bees, a person has one exceptionally good queen, how would such person proceed to re-queen the other hives from her?

THE SECRETARY.—Learn queen breeding.

MR. SEASTREAM.—Well, I can raise a few queens and so can you.

THE SECRETARY.—I go to the poorest hive I have, pinch the queen's head off, then I go to the best hive where my best queen is, and take out a frame of brood which has plenty of fresh laid eggs and put it into that hive. Sometimes they will rear fifteen to twenty queens.

MR. DADANT.—Do you remove the other brood frames from that hive.

THE SECRETARY.—No, I watch that they do not start any queen cells on their own combs, let them rear on just the frame that I put in from the best hive and do it in about the time, say 10 days will possibly be time enough, so your hives will be ready to put the queen cell in.

MR. SEASTREAM.—A queen-breeder would simply go to work and take the eggs from the hives. That is all he would do.

MR. BISHOP.—I believe that, in doing that, you put the bees to a whole lot of work, perhaps in drawing cells on their own brood. If I were going to do it I would switch the whole set of frames, then the work would not have to be thrown away. I would not take one frame, I would switch the set of frames and then let the queenless colony go ahead. If I were going to re-queen all my colonies from this one queen, I would go to work and raise a batch of queens after the Doolittle plan. You can rear a batch of queens above the colony with the same queen in it. Then you can go to work and put your cells in there that you have prepared after the Doolittle plan. This way you can get all the queens that you want. If there is not any honey coming in, stimulate them a little bit. It is no trouble then to get a batch of queens big enough to re-queen the whole apiary.

MR. DADANT.—When would you introduce the queen cells?

MR. BISHOP.—I would not introduce the cells, I would introduce the queens. I would introduce the virgin queens. I would go to work just the day before they hatch and put those cells all down and cage them. Put a screen over the top of a good strong colony, a frame with a screen of fly netting, put that right over the top of the brood nest and lay on those caged cells. I would put in about 12 to 15 young bees that were just hatched out in the cage, lay them right down on this screen. Of course you put the food in there and the candy, lay that on top of this screen and cover with burlap. When those are hatched out, take the old queens out and put the new queens in.

THE SECRETARY.—It is as easy to re-queen with queen cells as with queens.

MR. DADANT.—How successful are you?

MR. BISHOP.—From those I reared myself in the past few years I would get almost every one.

MR. DADANT.— At what age?

MR. BISHOP.—Oh, from 24 to 48 hours old and some of them really younger than that and they are the better just shortly after they emerge.

THE SECRETARY.—Mr. Bishop, if you do lose the use of a colony one year, if they are rearing queen cells, they could not do a better thing, saving all the other colonies from rearing them.

MR. BISHOP.—Yes, that is true.

THE PRESIDENT.—What is your objection to introducing the queen cells, removing the queen and putting in the cell next day?

MR. KILDOW.—I like that the best.

THE PRESIDENT.—I wanted Mr. Bishop to bring out the point. I want to know why he introduced the virgin queen and not the cell.

MR. BISHOP.—I have tried the cells quite a good bit, but you have to leave a space between the combs, you have to lay the cell on top of

the frames; your bees will not cluster up there, you will have to take care of them until the period of hatching. If you take and spread the combs and put the cell down between the combs, why, they cluster there and care for it and keep it warmer than they would otherwise, but I found in that case where I spread the frames a little bit like that, and there is honey coming in, it will cause quite a good deal of trouble when you take the cells out to put the combs back in place; if I could do that I could get just about as good results with quite a good deal less trouble.

MR. SEASTREAM.—Under the head of re-queening, I have tried that a number of years myself. The way I proceeded, I have not any trouble about any combs. I simply take the queen cell and cell protector and put them in the center of the hive, the brood chanber. If there are excluders, I put them below one of the excluers. I simply jam the two frames together like they were before the queen hatches. I can take those year out and year in, and I lose four or five per cent, but I would not lose it if they raise a queen of their own in place of the one I put in the hive.

MR. DADANT.—I though I had one or two suggestions, but similar suggestions have been made by others. If you want to raise a large number of queen cells, Dr. Miller's method is certainly the best. Previous to raising the queen cells he takes a frame in which he places foundation that is cut in a zigzag way. He puts that in the hive where the select queen is. The bees do not lengthen it much before she fills it with eggs. When the first eggs hatch into larvae, take out this comb and insert it in the queenless hive from which you intend to rear queen cells. It is all young larvae or eggs and since the comb is not fully built the bees will readily find room for their queen cells. On a full comb of brood, on old comb, there is less room for them to rear cells; but when you give them a comb only partly built and new, they build cells on it readily.

As to the time of introducing cells, it should be done on the tenth day after the giving of brood to the queenless colony, for the queens often begin to hatch on the tenth day, if they have been reared from larvae 3 days old and some of the finest queens that I ever raised hatched on the tenth day.

So if you make nuclei or swarms by division, you should prepare them on the ninth day after starting your queen rearing. Then the next day, the tenth, insert your queen cells. We place them in a V shaped opening right in the center of a brood comb.

The method of rearing queens in the super is the modern one and I have never practiced it because I quit queen-rearing about 25 years ago.

I have not had any success in introducing virgin queens. Our Dr. Miller says, where the question is asked him, that he is not any too sure in introducing virgin queens and I say the same thing. I have failed oftener than I have succeeded and I believe that introducing them when they are less than 24 hours old is the best way. I would rather introduce the queen just as she comes out, or a very short time after, but I prefer to introduce queen cells. Introducing cells right in the frame, right in the middle of the brood, I think is the best thing

you can do. Cut out a little corner, triangular, put your cell in there, hanging down and when you get back it will be fastened and the queen hatched out.

MR. BISHOP.—I had 58 cells on the plan that you are speaking about. Understand, I did not give them a full foundation, I gave them a half piece and this half sheet they just started to draw and before I gave it to this colony the cells were not over half drawn. I got 48 cells.

THE PRESIDENT.—Any one else have anything on this question?

QUESTION.—What success have pound packages of bees with queen, purchased in the spring of 1917 proved to date?

THE PRESIDENT.—Has any one had any experience with pound packages during the last year? I guess the majority were unable to buy pound packages.

MR. TYLER.—I bought two pound packages and had them delivered last spring at this town.

THE PRESIDENT.—In 1918 it was impossible to buy any packages. I tried and I could not find any bee-keeper in the United States that could sell me bees in two pound packages.

MR. HINTZEL.—Did you buy some bees two years ago in pound packages?

MR. WARBER.—I bought one pound with the queen that proved satisfactory in 1917, they brought some surplus honey and this year they were just the same as any swarm, probably a little bit better than some of the others, probably the result of having a better queen than the others; the result was satisfactory. I just tried it with one pound, to see what the results would be.

QUESTION.—How many are there present who produce extracted honey and do not use queen excluders?

MR. KILDOW.—There three here.

MR. HEINZEL.—I believe Brother Bishop asked that question.

MR. BISHOP.—The idea I had in mind was to find out what kind of a frame these brothers outside of Brother Dadant used. I use the Hoffman frame and I can tier my colonies up five and six bodies high. If I use for extracted honey my queen will go right to the top every time. What I was trying to get at, is that a good method that I use or is there any other method?

THE PRESIDENT.—I should like to hear what Mr. Millen has to say on this subject.

MR. MILLEN.—We have one bee-keeper in Iowa, near Ames, who never used queen excluders and he has very little trouble with the queen going up. He uses a system of re-queening, and he can kill his queen without reducing the flow. He kills the queens and uses young queens and he never has any trouble with the young queens going up through the honey into the upper bodies. Mr. David Rainey, of Michigan, who produces extracted honey entirely, does not use queen excluders, but Mr. Rainey practices the shaking method and about every ten days, he will go around and shake the queen and all the bees into a super, putting the body of the brood right on top, then he cuts out the queen cells.

THE PRESIDENT.—We should like to hear from Mr. Pettit on the subject.

MR. PETTIT.—We use excluders entirely in our work and there may be some kink in the management that we have not got to, to get along without excluders, but we find the same ambitious disposition in our queens that this gentleman here finds, the queen likes to get to the top of the hive.

MR. HINZEL.—I find my queens go to the top of the hive, no matter how high, If I put the excluder on, they get up there some other way. I guess I have a stubborn set of queens.

MR. PETTIT.—I think Mr. Dadant has a point that I have not heard him mention. I should like to hear from him on that.

MR. DADANT.—Mr. President, we began with the American hive, but soon changed to the Quinby frame. The Quinby hive was originally a hive of 8 frames, containing a little more room than the ten-frame Langstroth. We later manufactured it for 11 frames, 10 frames and a dummy. This has since been called the Dadant hive. The ten-frame Jumbo is a copy of it, the only difference being that the Dadant is a little over an inch longer than the Langstroth and 2 inches deeper, while the Jumbo is of the same depth as the Dadant and of the same length as the Langstroth.

Now as to our comparative experience. We use supers six and five-eighths inches deep and we rarely have the queens go into the supers to lay, unless they seek drone cells and there are drone cells in the supers. The reason why they stay below is that they have enough room there to breed, even though we do not use excluders.

We had never used Langstroth hives till I was requested to take care of about 110 colonies in 10-frame Langstroth hives. I cared for them exactly as I did for our hives, placing supers of the same size upon them. In practically every case of strong colonies in Langstroth hives, the queens went into the supers to lay, while those in our hives remained in the brood chamber. Now can you tell me why they should go into the supers of the Langstroth hives and not go into the supers of the Dadant hives? I can see only one explanation and that is that the 10-frame hive is too small for a profilic queen. If you can give me any other explanation, I should like to have it. A prolific queen will fill more than a 10-frame Langstroth, therefore, when you give her a super she goes up. After she starts going up, there is no reason why she should not go up to the top. But if you have a sufficient chamber and when the crop begins your queen has not moved from that brood chamber and has had ample room, she is not apt to seek for the top cells.

When the bees fill that top story with honey, this confines her below, effectively. But, if there is no drone comb in that brood chamber, she may seek for them above. In that case the bees often leave empty any drone comb that may be in the upper story, for her use. Dr. Miller called that fact to my attention. I had noticed it, but had not understood why the bees left that comb empty, among full combs of worker cells. So it is of great importance for us to have no drone comb in the upper story if we wish to confine the queen below.

So in practice, if we are careful not to have drone comb in the upper story, with our large brood chambers and shallow supers, we rarely have any brood above.

There may be something in the location, I do not want to say that there is not, there may be some other reason, but we have had the same trouble with the ten-frame Langstroth hives that you people have had and I think the fact that the hive is too small explains why the queens went up.

When you use 8-frame Langstroth hives it is worse. The queens will go up into the next story and the bees will put some honey below and the queen will keep on going up as long as there are empty cells. We like the queens to remain in one brood chamber and we can get them to do so if we give them a brood chamber that has sufficient capacity. I have argued that time and again. I think last year we were arguing the large hive question. That is my hobby.

I want you to convince me if I am wrong, give me the reasons why, for instance, in an apiary of 120 colonies every colony that has a prolific queen in a Langstroth hive, the queen goes into the super, when they do not in the Dadant hive. I can explain it in only one way, that is, the queen had enough room in the large hive and not enough in the small.

MR. PETTIT.—One other point in Mr. Dadant's management that I thought he was going to mention but did not, and I have often thought it had a bearing on the question. Mr. Dadant, I understand, uses an extracting frame that is not quite so deep as the brood chamber frame.

MR. DADANT.—That is true.

MR. PETTIT.—And I was wondering if he stacked up half a dozen Dadant brood chambers all the same depth, if the queen was more apt to go up there.

We have found a tendency of the queen not to go into shallow supers if they could go into deeper ones. We have also found queens going up when they still had plenty of room below, with the Langstroth brood chamber.

That matter of the bees holding their drone combs empty when the queen wishes to have some drone combs to lay in, we have often noticed that, and I have considered that one serious objection to using drone combs in extracting supers, sometimes they will have all the supers empty. Probably it is the fault of the queen, the queen should be changed in that case, but those conditions occur.

QUESTION.—Will a strong colony with a queen below and queen cells above swarm?

THE PRESIDENT.—This is a question for queen raisers.

MR. KILDOW.—Some times.

MR. HEINZEL.—I believe they will some times, but I believe you can reduce the tendency by putting on two supers and putting a queen cell in the upper story.

As a rule, are golden Italian bees crosser than three-banded?

THE PRESIDENT.—I will ask our State inspector to answer that question. He ought to know.

MR. KILDOW.—I might answer it one way and you would say I was wrong. I might answer it the other way and the other fellow would say I was wrong.

THE PRESIDENT.—Answer your own way.

MR. KILDOW.—I found the general golden, what they call golden, through the State, and yet different men have different ideas of what a golden is, so I do not know exactly what to say, but I found the ordinary golden through the State are generally the quietest bees, as a rule. There are exceptions, of course, but I see no reason why we should think that the goldens are a vicious class of bees. That has not been my experience.

MR. BISHOP.—I have tried the three banded bees of the lighter color, so-called Italians, I have tried golden Italians from several different breeders, some of our best breeders, throughout the United States, and sometimes you find a colony of golden bees that are extremely cross and irritable and some times you find one that is a little bit dark fully as irritable and cross, but as a rule, I actually believe that the yellow bees that I have in my apiary to-day are really the best natured and I do not see but they gather just as many pounds of honey as the dark ones and when you go into an apiary and see the bees around, whether there is any difference in their production or in their qualifications, those golden fellows out there in the sunshine, it makes a fellow feel good. If there is no difference any other way I just prefer the golden, because the gold business is a nice business, if they will make you as much money as the dark ones, I would rather look at the golden bees.

THE PRESIDENT.—Possibly the State Inspector of Iowa has something to say about difference in the dark Italians and the golden Italians.

MR. MILLEN.—The only thing I have to say is that it is a matter of strain and I do not think we will find as many cross Italian goldens now as we did years ago. The bee-keepers seem to have improved their breed a little. I think it largely depends on the strain of the bees.

MR. KILDOW.—I do not think there is any difference. I am one of these fellows the bees do not care for, anyway, I do not have any trouble. I have been in bee yards where they chased the owners of the yard out of the place and I had no veil on and they would not bother me, they would get after the other fellow, goldens or blacks or hybrids. I had what they call the golden kind of bees in 1886 or 1887 and those bees were as gentle as the bees we get now. There may have been individual cases where some of them were regular hornets, but as for me, I find the so-called goldens through the State are really gentler than any other bees. None of them bother me, as far as that is concerned. Maybe I am not a good one to tell about these bees.

MR. PETTIT.—On this matter of cross bees, I think there is something in having pure strains. I have been told that pure bred Cyprus bees are gentle. The Cyprians I have had to do with were mixed, they were anything but gentle. I have an idea that some of the golden we have get their color from a little mixture of Cyprians. On the other hand I have been in an apiary of one hundred or more colonies tiered way up, eight strong colonies golden Italian bees and we sat

out under a tree gossiping. The bee-keeper's little daughter came out between a row of hives without being stung. They were gentle bees, good workers. That man swore by the golden Italians. A neighbor that has the other colored Italians had had better success with the darker colors than he had with the goldens. In Canada we are inclined to think that the darker race is more hardy in the winter than the golden that we generally get.

MR. KILDOW.—I want to ask a question before we leave this subject. Isn't it a fact that you can take a good strain of three band Italians, or take a strain of Italians and select yellows from those for several generations, cannot you get what we call or what is produced nowadays, a golden Italian from them? Do they necessarily have to have Cyprian blood in them to really bring about a yellow brood?

THE PRESIDENT.—I will ask Mr. Pettit to answer that question.

MR. PETTIT.—I should say decidedly no. But as a matter of fact I consider some of the southern breeders got their colonies from there. I remember one man in Texas breeding splendid bees, but they were snappy. A bright yellow, they had that little golden hump on the back of the thorax, which is inclined to mark the Cyprian.

MR. KILDOW.—I think you can breed a yellow bee from the straight Italian.

MR. DADANT.—I have been in Italy, I have not seen a golden, they are all three banded bees. I do not know whether you would call them lighter colored, but they are not bright golden bees. Now, can we raise golden bees from the darker Italian? I think we can. The first we ever bought in 1866, 1867 or 1868, were very bright yellow. They were bought from a breeder who has been dead many years, but he was breeding for color. The reason they were breeding for color was because people wanted yellow bees. They wanted them not only because they were pretty, but because they thought that was a test of purity, and I think you have more sluggish bees among your pretty looking bees. If you select for color, if you select one quality to the exclusion of everything else, you will get that quality, but will perhaps lack in some other point. While the golden pure Italians are not so active as the every day Italian bee as existing in Italy, on the other hand, when you get the mixture with the Cyprian, you certainly get a yellowish bee, but you get a bee with the characteristic of the Cyprian. I do not know whether we had the pure Cyprian. We compared the noise they make to that of a frying pan whenever the smoke hit them. It did not frighten them, they went all over the hive and they were ready to jump at you as soon as the smoke cleared off. You never could get them filled with honey. We thought they were pure; maybe they were not. We thought if they were still purer they would be still crosser. I think the mixture of the golden Italian and the golden Cyprian are the cross golden.

Speaking of color and raising for color because a bee is pretty, I remember when I was at Mr. Doolittle's two years ago last summer, and he showed me some beautiful queens and beautiful bees and I said, "What do I care whether the queens are pretty and bees are pretty?" He said, "you like to look at a pretty girl? Well, you like to look at a pretty bee too."

MR. KILDOW.—Doolittle, as I understand it, for many years before he died made a business of rearing what he called goldens and I do not believe we have a man in the bee fraternity to-day that will come up to the average that that man had year after year, wintering and storing surplus. Now if we are going after some other points, why cannot we have this? There is no man living, I believe, that has given us better works on bees, hardly, than Doolittle. If we are going to take Tom, Dick and Harry's, why not take his authority. I am not crying up the golden or the black, I have got a mixture of all of them, but give each fellow his dues.

QUESTION.—How can we eradicate European foul brood?

MR. MILLEN.—I think that depends upon circumstances, but there are two things undoubtedly that have a great bearing on it, young, vigorous bees and strong colonies with lots of honey.

MR. HINZEL.—You expect that would be a prevention, you name that as a prevention?

MR. MILLEN.—No. It does not eradicate it, it keeps it under control. It is hard some times to eradicate it.

THE PRESIDENT.—Let the Illinois man talk and get the two inspectors in an argument.

MR. KILDOW.—It is hard to get into an argument, because we agree. Take his plan and if you at first do not succeed, try again. That is the only way I know of. If first your queen does not clean out the disease, re-queen them again.

MR. HEINZEL.—He did not say anything about re-queening.

MR. MILLEN.—I think many bee-keepers fail because they do not combine the three things. They wait till the young queen in a weak colony should bring results, they do not have the combination. If you have young queens, have a good resistant strain and a strong colony and then plenty of honey, you should not worry about your European foul brood at all.

MR. KILDOW.—I do not think we can add anything to it, unless we say, do it over again.

MR. PETTIT.—I put in that question to start an argument, but I have not succedded very well so far. I do not consider my question is answered. I put in the word eradicate, because I only know of one case where it has been reported that European foul brood has been eradicated and when I say eradicated I mean so that it does not occur again in the apiary or the community. I know of one state where the inspector reported having eradicated it from whole counties and districts. I am like Mr. Millen and Mr. Kildow; with these three factors in control I am not worrying about European foul brood and I really suppose I should drop it at that.

We had a great deal of it in some sections of Ontario and the trouble that we have had in our inspection work has been to get the idea across to bee-keepers that we are not teaching them. That all they have to do is to get Italian queens and to forget about the bees until some time when it is time to take the honey off, something like that, that they have done their duty. We need the other factors, strong colonies and plenty of stores and with that we can keep it down, but it still needs watching. The first man in Ontario who reported

European foul brood was reported ten years ago, European foul brood as such. The last report I had from him, a year or two ago, he was still keeping it under control. I met a bee-keeper who had never succeeded with bees before he got it, but he had to either go through or go out, but he went through and he had some golden bees, good workers and he has not entirely gotten rid of it, but he is carrying on.

MR. BISHOP.—When I first heard of European foul brood, I thought when a bee-keeper got that into his apiary and got it pretty well spread, that he had his apiary ruined and he would never get back where he had previously been, but I find that is a mistake, such as the gentleman here has just stated. European foul brood into an apiary often will make a bee man, whatever he may have been before, it will make a successful man out of him, simply because it will drive him to something he had never done before. I know when I first had something wrong with my bees a number of years ago, I had kept 30 to 60 hives for quite a few years, I noticed that there was something wrong with the brood in quite a number of hives; by reading journals, I thought I must have some foul brood in my apiary, so I wrote to Washington in regard to it and they sent me down a little box for mailing a piece of this brood back to Washington and I filled this little box with brood and fixed it up as they requested and mailed it back to Washington. Then I heard from them and they said that I had European foul brood and it was not long before Mr. Kildow came down there and he was looking around and looked through quite a few colonies and said, "You have European foul brood and it is getting quite a start." He told me what to do and I went to work and had pretty good success. I had a little left at the end of the season, and next season I go almost rid of it and I have had very little since. That has been a number of year ago. I have found if a fellow keeps his eyes open every time he opens a hive of bees, look at the brood, see that it is pearly white and you get so accustomed to that, if there is anything wrong, you will catch it and it will not give you very much trouble. That is the experience I have had with the European foul brood.

MR. HEINZEL.—We have a bulletin printed at Washington, D. C., which gives a good plan that is easily handled to eradicate European foul brood. They have what they call a test yard to treat the disease, the same as they would with the American foul brood and re-queen at the same time and then they stack up their diseased colonies and this brood hatches out. I think that plan will work out very well. I have never tried it myself, but I do not see why it should not work.

MR. KILDOW.—We tell men how to treat, if they would do what we tell them. So many will not do it. They do things the wrong way, and then they cuss the inspectors the next time they come around because they say they told them wrong. If they would follow the instructions we would have very little European foul brood. But they have some way of their own. They do a great deal like my wife does—sometimes I like to tell a story on her; she will get a receipt, if she is going to make a cake or something, she will not follow it out, but will put in something of her own, then if it is not right, she will blame the receipt.

MRS. KILDOW.—She will put in honey instead of sugar.

MR. STONE.—I should like to ask Mr. Kildow if there is anything that you would like to add to put in the report. We will put anything in that report that you think is better than what we have.

MR. KILDOW.—It is in the bulletin in just as few words as we can get it.

QUESTION.—If a queen excluder is placed over the entrance of a colony having queen cells due to hatch, and kept there for a day or two, will the colony swarm when the excluder is removed?

MR. KILDOW.—I can partly answer that, Mr. President. If enough of those queens hatch, and the colony depends on swarming, the first chance they get, they will try to swarm, but if they have not got the swarming fever, then the chances are that they will hold those queens so that they will not get away.

MR. HEINZEL.—I suppose this question is meant, on the colony that has the swarming fever.

MR. KILDOW.—Yes. Where is the excluder?

MR. HEINZEL.—Between the bottom board and the hive. I do not know whether they will try to swarm or whether they will destroy the cell.

MR. PETTIT.—My idea would be that they would go out when they got ready to swarm, and if the queen could not go out, they would go back. They would repeat that next day, possibly the third day, I do not know how many days they might keep it up, but eventually, if the queen could not get out, they would probably kill her. If the excluder was taken off in the meantime, of course they would get out and go.

THE PRESIDENT.—Mr. Dadant, have you anything to say on that?

MR. DADANT.—I never tried an excluder in a hive.

THE SECRETARY.—It is a new proposition.

THE PRESIDENT.—Mr. Millen, have you anything to say?

MR. MILLEN.—No, I asked that question. I have seen it tried once or twice, and it has proved successful, and they only use it on a strong colony, and the bee-keeper avoided tearing down the chamber for the queen cells. After the queen had been removed, the colony was allowed to build cells, and of course would have swarmed, but the excluder was placed in front of the entrance, and that was left on there some time. It saved the bee-keeper taking off the hive supers.

MR. DADANT.—I am afraid they would have a lot of queenless colonies.

MR. KILDOW.—It looks to me as if the bees would get together and kill each other off.

QUESTION.—Would the use of an excluder in this way be possible in commercial bee-keeping?

MR. HEINZEL.—I should say, No, for myself.

THE PRESIDENT.—I am somewhat afraid that the bees, if there was any swarming impulse, would swarm and return and kill the queens, or kill the one that was left. They will do that quite often, when you clip the queen without using an excluder, because she cannot leave after that, they will return and kill her, even though the young queen has been destroyed, or the cell has been destroyed, or if there is and egg that will raise a new queen they will swarm, and I think under

the other way they would possibly kill all the queens, and, as Mr. Dadant suggested, you would have a number of queenless colonies.

Mr. KILDOW.—I also think that they would be wasting time in trying to swarm, and getting back.

MR. PETTIT.—I would consider that it is taking too big a chance on the queen conditions of the colonies. Colonies that are re-queened, if they do not get a queen within a certain time, become hopelessly queenless and it is a pretty poor proposition.

QUESTION.—Why do the bees ball an old queen even when they have no queen cells, or young queens?

MR. KILDOW—That is one of the things we cannot tell.

THE PRESIDENT.—I have known it to occur. Can you answer it, Mr. Kildow?

MR. KILDOW.—It is something I cannot understand.

MR. HEINZEL.—I know it has been done, I cannot say why.

MR. KILDOW.—They do it in an angry moment.

MR. HEINZEL.—I know lots of times when I disturb them they get to balling the queens, and you cannot save them.

THE SECRETARY.—Don't they ball them to protect them?

MR. KING.—You break the cluster, they catch right on again.

MR. BISHOP.—I have had quite a little experience with that. When I am clipping my queens in the spring, I frequently have had them ball the queen, and so I carry a little cup or something along with me, with some water in it, and I have also some queen cages along with me. Well, if they should happen to ball a queen, I pick up the bunch of bees and throw them down into the water, and the worker bees all get off, then I pick up the queen and just clip her and put her in a cage and put her back in the hive and close the hive; in a few days I go back and take the cage out, and everything is all well and good and I never lost one of them.

THE PRESIDENT.—That was balling at the time of clipping?

MR. BISHOP.—Yes, that was due, I understand, to disturbances.

THE PRESIDENT.—You change the order of the queen by handling her.

MR. BISHOP.—Yes. I have never lost a queen in that way.

MR. HEINZEL.—I have had them ball when I did not have hold of them at all, and I guess it is not the change of order from the hands.

MR. BISHOP.—I have had most of those queens balled, understand, before getting the queens, while looking at them; I would find them on the bottom board, but I never could tell whether they balled after I clipped and put them back, because I closed the hive.

MR. KILDOW.—In a good many cases, when you open the hives the queen seems to get frightened and she runs and fights and squeals and they will grab her, I have had them sting her before they ball her; it seems the first one that grabbed her, stung her and killed her right there. It seemed to me it was caused through fright. Sometimes, if you feed them, they will ball her. I have noticed often when the queen starts to run and makes a noise, then they attack her.

MR. TYLER.—I had a little experience this summer when I noticed a ball of bees drop to the bottom, they were balling the queen, I shook the bees off. She was clipped, and I knew positively that that queen

belonged in that hive. I tried to catch her. First I tried the honey plan, daubing her with honey and went back in 15 to 20 minutes and she was balled again. Then I tried to catch her and they were balling her again and they continued that. I watched them all afternoon, went to the hive every little while and they continued to torment her until they killed her and they had absolutely no preparation for a new queen. They were queenless afterwards and tried to raise a queen right away. They knew there was absolutely no queen in the hive.

MR. BISHOP.—If he had got hold of this queen, and caged her, this odor that he left with the queen would evidently have escaped by the time she was released, and nine times out of ten she would have gone back all right.

MR. HEINZEL.—Why would not dipping her in honey remove the odor?

MR. BISHOP.—That does not necessarily take the odor away from her, the honey does not. It takes a certain length of time to escape. All you do is to daub that over the body and she still has that odor, she cannot clean herself of it and by the time they get that honey off, she still has that odor, it has not any chance to get away.

MR. TAYLER.—You understand, this bee was balled when I opened the hive, I did not touch her at all. So she had the odor of the hive, she was balled when I opened the hive, because I saw the ball drop to the bottom. It was a large ball, a cluster around the queen the size of a walnut. It was the first frame I took out and she dropped to the bottom.

MR. DADANT.—I just want to suggest that perhaps bees are like human beings. We have known of boys killing their mother.

THE PRESIDENT.—Absolutely.

MR. DADANT.—I mention that, because perhaps there are a few bees in the hive that get angry at the queen, we cannot tell, it is sub normal, it is a mystery, it is not normal for a boy to kill his mother, but that happens, and I suppose there are cases where the bees become cross; it is too bad to think so, but they have as bad traits as we have.

QUESTION.—How are the golden, crossed with leather colored bees for work and gentleness?

MR. PETTIT.—We very often get the report that the so-called hybrid bees are good workers. It is like any live-stock, they often get the best results from the first cross of grade animals and I do not know that that is an argument in favor of keeping races of bees, because while the first cross may be all right, we do not know what we are going to get from the future generations. If we can stop at the first cross, it may be all right. We always find that the crossed races are cross bees too.

QUESTION.—Is the shallow or deep extracting frame the best?

THE PRESIDENT.—I might answer that. I asked that question several years back and a certain gentleman said the shallow is better on your back, he meant it was easier on the bee-keeper. Of course the question came up awhile ago that possibly in the shallow frame the queen would go up to the second story as readily as she did in either frame, but as far as the production is concerned, I never could see any difference. I have tried both.

QUESTION.—Will a brood chamber frame do for extracting?

MR. HEINZEL.—I would say, yes.

MR. BISHOP.—I use the full depth Langstroth frame for extracting and like it pretty well. The reason is, if I want to switch with any brood chambers, I can do that any time, with the same size frame. In that way I think it works out very nicely. I do not believe they are as nice to handle as a shallower frame; at the same time, when you get one of them uncapped and set two or four in your extractor and sling out the honey, you do not have to handle so many frames to get the amount of honey. For some reasons I like them the best, for some other reasons I do not like them so well.

MR. HEINZEL.—In case you have a light colony in the fall of the year it is nice to slip into it a heavy comb of honey.

THE SECRETARY.—I want to tell about my plan for lifting. I had a whole lot of brood frame size supers and I did not know how I was going to lift them. My son does not like the bees at all and they do not like him. If he gets a bee sting anywhere on him it will swell him all over in blotches, so I planned a derrick, or a tripod, about 12 feet long and then I have a little block and tackle to go on and made a kind of a clamp, that took hold of the hive as ice tongs do a piece of ice. Then raise up with that and it locks anywhere. Raise the super, then put the bee escape in, you can do anything you please with it, then the second day you can go back and take that off without any bees, take it off the same way with your tackle and put it on the wheel barrow as it stands right there. I do not handle them at all. That is a good arrangement for an old man that does not like to lift.

THE PRESIDENT.—Those are all the question. Is there any further buisness?

This evening the meeting will be held across the hall in the dining room. That is the only room in which we can hang up the curtain to use the latern and Mr. Pettit will give us a talk at that time.

TUESDAY NIGHT SESSION.

Illustrated lecture (lantern slides) Mr. Morley Pettit, of Georgetown, Ontario, Canada.

WEDNESDAY MORNING SESSION.

THE PRESIDENT.—The first order of business will be the report of the Committee on Resolutions of the State Bee-Keepers Association to the Legislature. I will call for that first.

Mr. Dadant then read the following resolution:

In view of the increased consumption of honey and the greater demand for sweets;

In view of the fact that honey is a natural product, supplied by Nature in the flowers without cost to human beings and without effort of any kind on our part;

In view of the high value of honey as the best and purest of sweets;

In view of the usefulness of the honey bees in the fertilization of flowers;

Be it Resolved, By the Illinois State Bee-Keepers Association, that our industry should be taught and helped in every possible manner; that the succor of associations is one of the best means of advancing the pursuit, and that we appoint a committee to interview the State Representatives and Senators to ask the continuation of the State appropriation in our favor.

On motion of Mr. Dadant, which was duly seconded, the foregoing resolution was unaminously adopted.

Mr. Dadant then offered the following resolution:

Resolved, That our thanks are extended to the management of the Leland Hotel for the splendid room and accommodations granted to our meeting.

Resolved, That this expression of our thanks be spread upon the minutes and a copy sent to the hotel manager.

Motion to adopt the resolution was duly seconded and carried.

MR. DADANT.—I have two more resolutions. One is in referecne to the address which I made yesterday afternoon, and on which a committee was appointed to pass a resolution.

(Mr. Dadant then read the first draft of resolution which, as amended, appears at the close of his address.)

THE PRESIDENT.—Do you wish that resolution sent to the Food Commission?

MR. DADANT.—Yes, I think probably it would be best. I think that was the sense of the meeting.

MR. MILLEN.—Regarding that resolution, would it not be a good point to bring in the fact, that the manufacturers of substitutes for butter are not allowed to call them butter, they have to label them with some word that does not contain the word butter.

MR. DADANT.—Then we had better put that off and I will word it a little differently.

THE PRESIDENT.—All right, we will put that resolution off.

MR. DADANT.—This is a resolution in regard to the death of Mr. Becker:

WHEREAS, God in His wisdom has removed from our midst our Treasurer, Mr Charles Becker;

WHEREAS, Mr. Becker has served the Illinois Bee-Keepers' Association for years effectively as its Treasurer;

Therefore, be it Resolved: (I) That we feel deeply the great loss to the Association, but submit meekly to the Heavenly Father's will; (II) That we extend to the breaved family our heartfelt sympathy. (III) That a copy of these resolutions be spread upon the minutes of the Illinois State Bee-Keepers' Association. (IV) That the Secretary be instructed to send a copy of these resolutions to Mr. Becker's family.

A motion, duly seconded, that the foregoing resolution be adopted, was carried unaminously by a rising vote.

REPORT OF AUDITING COMMITTEE.

SPRINGFIELD, *December 18, 1918.*

We, the undersigned Committee, have examined the Secretary and Treasurer's books and find them correct.

A. L. KILDOW.
FRANK BISHOP.
A. O. HEINZEL.

A motion that the report be accepted was duly seconded and carried.

THE PRESIDENT.—Are there any other reports?

MR. KILDOW.—We ought to have some report of our Committee on Fair.

THE PRESIDENT.—I will let Mr. Heinzel make that report. He knows as much about it as anybody. What money was spent out there came out of the State fund. I guess we can give a report of that in a few minutes.

MR. HEINZEL.—I do not know how to go about such a report? I can make a verbal report. I am not a member of that committee but I will try to report in the committee's place. They called on me to help them out at the fair and I came down and took up the position as assistant Secretary. I tried to get as many members as I could for the organization; I secured 103, I think. Dr. Baxter, our President here, will probably have a better report than I have on the display.

THE PRESIDENT.—I might say in addition to that, that the State Bee-Keepers' Association had, as most of you know, had an exhibit which was really planned to teach the steps in bee-keeping, in the various kinds of hives, the evolution of the hive from the crude box-hive to the modern method. We also had an exhibit showing how honey was extracted, a process which attracted a great deal of attention. It was really an "eye opener" to a great many people to know that the extracted honey was obtained in as clear and clean a way, not mashed up with a spade and strained through a sack, as many suppose. The exhibit was really a success for the bee-keepers. We had one of the best, if not the best exhibit on the grounds. There was never any lack of interest. Mr. Copping, Mr. Stone and Mr. Seastream were our principal exhibitors there. They did remarkably well with their exhibits, considering the time of the year in which the exhibit was held. It was in August, which was really a bad time for a bee-keeper to be away from home with a lot of exhibits.

We paid Mr. Heinzel the same as the inspector. We paid $4 a day, he was there ten days, making a total of $40. We had some transfers from the fair grounds, hauling exhibits there and back, $7.50, and then we had a few incidentals, $2.40, which was practically all the expense attached to it. I think that exhibit is something that the State Society

should support, to be shown every year. It is the best educator that we can possibly have in the State, practically it is the only way to reach the people in the State of Illinois as a great mass of people. The Agricultural College is rather deficient in a course of bee-keeping. Mr. Kildow was there and if he has anything to say in regard to the exhibit, we should like to hear from him.

MR. KILDOW.—I have not very much more to say, but it seems to me this Association should keep up that exhibit at our fairs every year, because we come in contact with people there that we do not see any other time and what little instruction we can give in the way of using honey in good marketable shape and keep the bees free from diseases is one of the things we ought to do, just as much as making honey for the exhibit, because we can educate them more or less there and I am sure lots of them see sights that they never saw before, and I think we ought to keep it up, for its educational points, and that is what we are supposed to be doing, educate the public in our line of business.

MR. PITNER.—I want to add a word to what Mr. Kildow has said. I think that the financial benefit that the Association received is very gratifying. There is an increase of 103 members actively engaged in the work and we ought to have an organization that the State should be proud of. I agree with Mr. Kildow on the educational value. I came to Springfield on purpose for that exhibit and there are a lot of others in our territory just starting out, that want to get all the information they can, and all the practical advice they can, and I think, aside from the financial value, the increase in membership and the education that you fellow gave there is well worth the trouble and expense.

THE PRESIDENT.—I certainly agree with you. The Chair also wishes to report that the committee, after consulting with the Board of Agriculture previous to the last fair, decided not to make any change in the premiums. The Department of Agriculture takes over the fair on the 1st day of January. There will no doubt be some changes, what they will be I cannot say just now, but I assure you that they will be changes that will agree with the bee-keeper, especially the exhibitor, because it will be an increase in premiums. The premium list is a little small for the expense that a bee-keeper has to go to, in going there, and the average bee-keeper that shows at the fair can sell his honey without ever exhibiting it.

MR. WARBER.—I should like to say a word in regard to the exhibit, since there has been considerable misunderstanding regarding extracted honey. I think it would be well to have some literature explaining that distributed at the fair. It would save considerable time and talking.

THE PRESIDENT.—We are glad to have any suggestions.

MR. WARBER.—Written by some competent person.

THE PRESIDENT.—Of course, the new committee will take that into consideration at the fair. We are always ready for suggestions.

MR. KILDOW.—I move you that this educational exhibit and this committee which you will appoint attend to this part of it at the State fair.

Motion seconded.

Motion passed.

THE PRESIDENT.—If there is no further business, we will proceed to the election of officers.

MR. DADANT.—Mr. Chairman, I am now ready with this resolution.

Mr. Dadant then read the resolution with the proposed changes and on motion the same was adopted.

THE PRESIDENT.—Any other business before we proceed to the election of officers? I believe the first nomination is for the position of President of this Association for the ensuing year.

MR. DADANT.—Mr. President, I nominate our present President, Dr. Baxter.

The nomination was seconded by Mr. Kildow.

THE PRESIDENT.—Any one else you wish to nominate?

MR. DADANT.—I move that we instruct the Secretary to cast the ballot of this Association for Dr. Baxter for President.

The motion was seconded and put to vote by Mr. King and carried and the ballot was cast accordingly and Dr. Baxter declared elected President of the Association.

THE PRESIDENT.—Gentlemen, the next, is the election of five Vice Presidents as required by the constitution. Nominations are in order.

MR. KILDOW.—I suggest that we take a piece of paper and each write five names and the five that get the highest will be the Vice Presidents.

The President appointed as tellers Messrs. Kildow and Jeffreys.

THE PRESIDENT.—While the tellers are collecting the ballot we may proceed to the election of the Secretary. What is your pleasure for Secretary for the ensuing year? Nominations are in order.

MR. DADANT.—I nominate our present Secretary, Mr. Stone.

The nomination was seconded.

MR. DADANT.—Move the President cast the ballot of the Association for Mr. Stone.

The motion was seconded and carried and the ballot cast accordingly.

THE SECRETARY.—I thank you for the good will, not the office.

MR. DADANT.—We believe no one has more good will than our present Secretary. We realize that he, like ourselves, is getting older every year. He cannot help that. Whenever he thinks he is too old, it is his place to say so.

MR. STONE.—Thank you. I said something yesterday that some people have complained that they do not get the American Bee Journal or Gleanings, whatever they subscribe for inside of a week. They begin to write and complain and they even write to Mr. Dadant to know whether their dues have been advanced to them for their Bee Journal and that has been done in a great many cases. I would like for them to thoroughly understand that I am a busy man and do not have time to sit right down and attend to all these things on the minute, as though I was receiving a large salary.

THE PRESIDENT.—Nominations for the position of Treasurer are in order. Mr. Seastream is the present Treasurer, who was appointed after Mr. Becker's death. What is your pleasure, gentlemen?

MR. PITNER.—Move that the present Treasurer be elected for the full year.

THE PRESIDENT.—Mr. Seastream is nominated. I would entertain a motion that the Secretary cast the ballot, if some one will make that motion.

Motion made by Mr. Heinzel that the Secretary cast the ballot for Mr. Seastream for Treasurer, was duly seconded and carried and the ballot cast accordingly.

The ballot for five Vice Presidents resulted in the election of the following: First Vice President, Mr. Heinzel; Second, Mr. Withrow; Third, Mr. Coppin; Fourth, Mr. King; Fifth, Mr. Tyler.

BEE-KEEPERS AND BEE-KEEPING AS SEEN BY A BEE INSPECTOR.

(*By Professor F. Eric Millen, State Apiarist of Iowa.*)

Mr. President, Ladies and Gentlemen: I have found, after some years of apiary inspection, that the inspector not only inspects the apiaries, but the bee-keepers inspect the inspectors and sometimes the bees also take part in that inspection, so that the inspection is not all done from one side.

A few years of apiary inspection leaves some very marked impressions upon the inspector. One finds that year after year the same conditions exist and the work to a large degree becomes routine, that is, the actual inspection work; and I have found that bee-keepers can be classed into three or four pretty well defined classes, and first I would name the amateur bee-keeper.

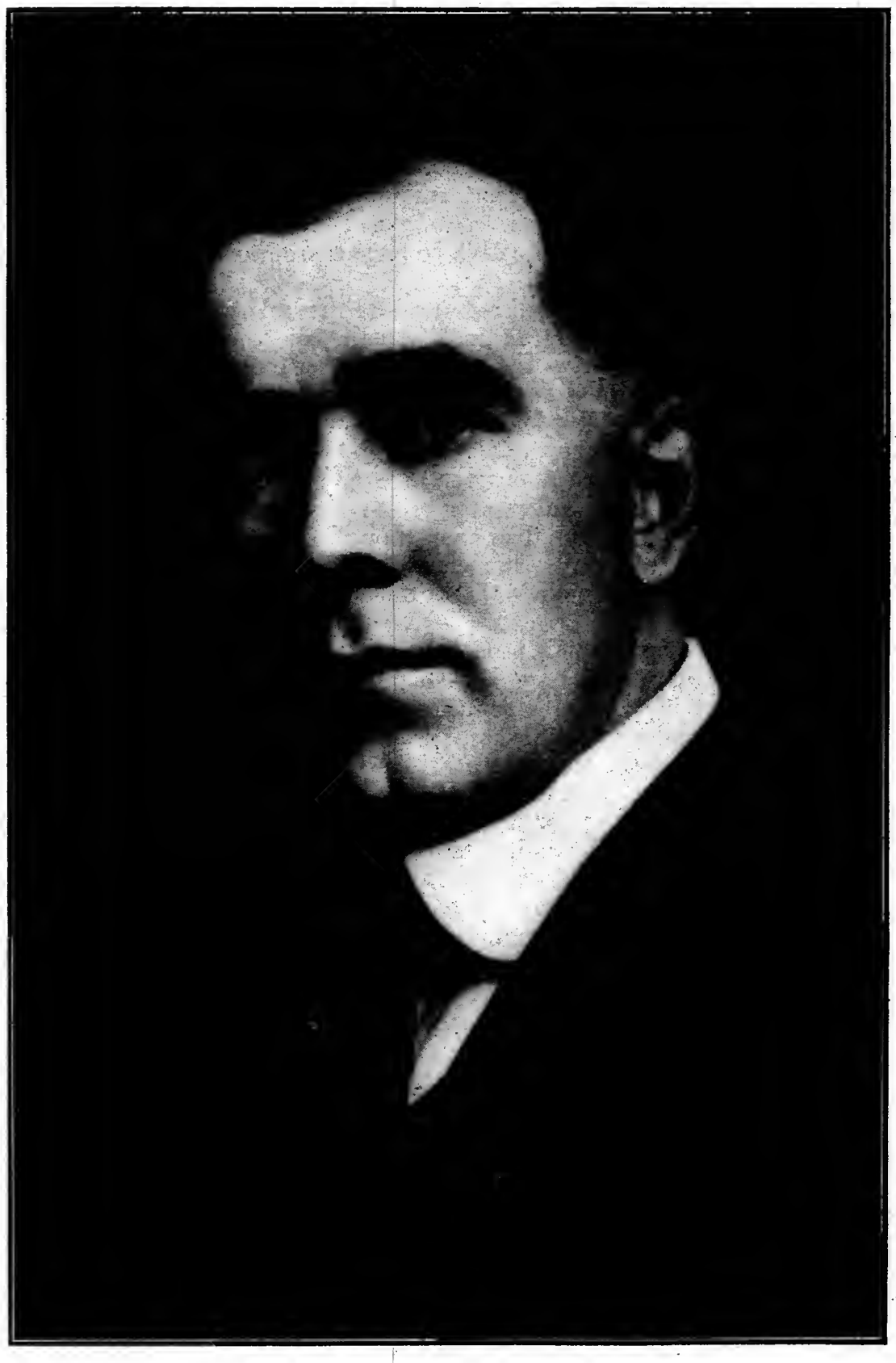
The amateur bee-keeper is one of the most interesting bee-keepers with whom the inspector comes in contact. We find that the amateur has usually more ambition and more interest than any other one class of bee-keepers, probably with the exception of the specialist, and the interest of the amateur is quite different from the interest of the specialist, because the specialist has come to the time when he realizes that the only way he can continue to make a success of the business is to keep plodding on, and that it has taken him a long time to arrive at the place he has reached. The amateur is constantly dreaming of the day when he can have his large apiaries and probably spend his winters in the south, or go to California, as some of the specialists do now. However, the amateurs vary quite a little, too. We find that some of them will get the bee fever and really it is no wonder that any one gets the bee fever. The subject itself is so fascinating and the amateurs see the honey in the combs and then they see a colony of bees, probably in the observation hive, and they hear about the life history and the behaviour and development of the bees, and the first thing we know, they have an apiary and we have an amateur bee-keeper and the fever may rise and keep rising and the time may come when that amateur bee-keeper develops into a specialist. A great many of our specialist bee-keepers to-day have developed from the amateurs of a few years ago.

However, the amateurs also provide us with quite a little amusement. I have had letters asking for a setting of bees' eggs, others want to start in the business and want to buy a pair of bees. Then we get letters again, from ladies, who state that they have a garden which contains a lot of flowers and how many colonies of bees could they keep in the garden, and I had an instance last year of a man—this is pretty hard on the men—who had about four city blocks in his garden, his garden contained that amount of land, and to give his bees more room he had placed one colony on each corner of the lot. He stated that the bees would be able to forage around better in that way and get more honey.

We also have a good many inquiries from amateurs as to how the bees can be wintered. Many of them take the bees down in the cellar and screen them up tightly, then put them near the windows. They they will write that the bees are dying very rapidly and want to know what is wrong. We find others who will put them in an upstairs room without any protection at all, and in that way, will lose the bees. However, the great point about the amateur bee-keeper is his interest, and I might say that if an amateur bee-keeper is started on the right road, then there is a great deal more hope for the amateur to develop into a specialist, than any other class, that is, there will be more amateurs developed into specialists than from the other classes of bee-keepers which I shall mention.

Another way in which amateurs are sometimes developed, is by reading a popular article on bee-keeping in some of the magazines. I had a striking instance of this last year. Mr. Pellett wrote an article for one of the ladies journals, and I had a large number of inquiries, which were addressed to the state inspector for Iowa, asking for information regarding the way that one should start off in the bee-keeping business, and I might also say that this winter Mr. Pellett told me that one of the ladies in giving the result of the summer's experience in her work and the benefits she had derived from the paper, mentioned that she had made quite a little sum of money from having started in bee-keeping through reading that article in the magazine. So that sometimes articles of that kind, with good information well given, are a source of benefit to bee-keepers.

Another way in which amateur bee-keepers are sometimes developed, and there has been some criticism in the past regarding this method of developing them, is by the teachers of bee-keeping at agricultural colleges. This criticism, however, has lessened a great deal of its force now. A great many of the bee-keepers, who developed into the specialist class a few years ago, were afraid that the teachers of bee-keeping in the various agricultural colleges, and the inspectors by giving public lectures and illustrated lectures and that kind of propaganda, would make too many bee-keepers. But I might say this, that in almost every case those young men and young women and older men and older women who take courses, whether they be the short course or regular course at agricultural colleges, or listen to lectures by specialists in bee-keeping, in almost every case those men and women are given both sides of the question of bee-keeping and when they start in they are told that while bee-keeping can be made



PROFESSOR F. ERIC MILLEN,
State Apiarist of Iowa.

successful, that it requires time and that it requires a great deal of knowledge and information of the life history and habits of the bee, so that the benefit which the bee-keeping industry derives from those amateur bee-keepers is much greater than any harm they can possibly do to the bee-keeping business.

Now another point I wish to make with regard to the making of amateur bee-keepers is this—in almost every case where an amateur gets a few colonies of bees, those amateurs will create a much greater demand for honey in their immediate locality than they can possibly supply. That gives the larger bee-keeper an opportunity to get rid of considerable honey, so that from that point of view alone, the amateur bee-keepers are really a benefit to bee-keeping rather than a source of danger. Of course we want to start them on the right road and keep them on that road, then there will be no danger.

We also sometimes meet amateurs who provide us with a good deal of humor, and they can often see the humor themselves, afterwards, but at the time the humor amounts to near tragedy. I remember one case especially of a lady who had taken a few lessons in bee-keeping and had gone out into the apiary with a number of other ladies and you know when there is a crowd, it is wonderful how quiet the bees are when they are handled. In those classes the ladies wore their summer dresses, with short sleeves, without veils and without gloves. They saw the bees handled and handled them themselves and they began to think that they could go right home and handle any bees in that way. One lady had about five colonies and last summer one of the colonies swarmed and she went out without a smoker and hived the swarm and got through in fine shape, did not get a sting at all. Then in a few days she thought she would like to put on a few supers. She went to the apiary, minus the smoker, and opened one colony and started to put on a super and before she could put the super on she was very badly stung and was in bed for two or three days afterwards. She realized then that there is not much use trying to manipulate bees unless you have the requisite knowledge and the appliances with which to work among those bees, and while she smiled about it, afterwards, she is still a bee-keeper and I think she will develop into a real bee-keeper, she realized at the time that it was amusing for those in the vicinity but there was no humor in it for her. Those are the things we have to guard against in giving instructions to amateurs. Give them a true idea of the necessary amount of knowledge that they require and then I think that the amateur bee-keepers are a benefit in every way to the bee-keeping industry and we must remember that it is from those amateurs that the specialist will be developed to a very large degree.

The amateur bee-keeper is usually a pleasure for the bee inspector to meet. We do not like to meet bee-keepers who have no interest in the work and from that standpoint, of course, the amateur is full of ideas, full of the bee fever and is always asking questions and a great many of the answers to those questions will benefit the bee-keeper quite a little, so that the amateur bee-keeper is usually a friend of the inspector and we like to meet him and talk with him.

Now, the next class of bee-keepers which I have marked down is typical, and I am sure any of us who have had anything to do with apiary inspection work will recognize them at once and I find it almost impossible to give this class of bee-keepers a name. You will recognize them, however. Usually—I am sorry to say this, not because it is any reflection on farmers, but usually this class of bee-keepers is found among the farmers and I have gone into apiary after apiary in different vicinities and found this same class of bee-keeper existing. You go into the apiary and ask him how many colonies of bees he has and he cannot tell you whether he has one or two or three, or whether there are a dozen. In many cases the bee-keeper has not seen those colonies of bees for a long time, he may have passed by, but he has not examined them properly and often times not for a year or two and usually we find the bees in this case in some out of the way corner on the fram, somewhere near the outbuildings, but in a corner where they will not be liable to attack the beekeeper himself, or the stock and where they will be out of the way from any attention, in fact, he almost forgets them entirely. Usually, we can find the apiary, but if it is in the summer time, it is pretty hard to find the hives, because the weeds have grown up around them. In some cases where the bee-keeper has bought the bees, and the hives happened to have removable combs, we can look into them. In a great many cases we find, with the men who hive their own bees, the combs are criss-crossed, they are really box hives and often times we find one or more of those colonies which have died and the wax moths have cleaned them out and there is nothing but a mess of webs in the hives. Sometimes the men who own bees, in that class, will place on a super, usually after the colonies begin to swarm, and some times they will not look after them from year to year. I have seen many bee-keepers of that kind who will have as many as 30 or 40 colonies of bees never attempt to catch a swarm, never attempt to hive the bees or care for them in any way, with the exception of placing on a super and in many cases I have seen bee-keepers who will start to place on a super in the morning and not get it finished until night. They have no smoker, no bee veil, and we all know that if one attempts to handle the bees without these appliances, unless conditions are just right, then if we jar off the cover rather quickly, we want to put on that super in a hurry and leave. I have seen bee-keepers who will start in the morning, the first step is to get the cover off, then they will wait a while, then get the super on perhaps not quite right, then go away and later finish straightening the super and finally put the cover on, usually get the cover on after dark. We can readily understand that bees kept in that way are a source of trouble not only to the bee-keeper, but also to the ladies, because for a few days after the supers have been placed on the hives, the ladies of the house cannot go out and hang washing, or do other necessary outside work, for the bees are out hunting for them. One realizes that if the farmer bee-keeper of this class succeeds in getting one super on each colony he is doing well, he receives sufficient stings to last him until it is time to take the supers off in the fall.

Now, what is the trouble with those bee-keepers? The great trouble is lack of interest. We have entered apiaries of that kind where the

men who owned the bees would tell you, that the bees are over there and would not even take the trouble or have the interest to go over with you and look over the bees while you were looking through the apiary. In many cases he would not trouble at all. If there ever was a necessity for burning colonies, or destroying colonies that were affected with disease, that is the only occasion where I think it is proper to destroy colonies, in the apiary of a man of that nature. In fact, a great deal more good could often times be done if some neighboring bee-keeper who knows more about bees and takes care of his bees, can buy the apiary from the careless man. In that way we make no bad friends and the bees are removed and we feel sure that that man will never keep bees again. On the other hand, if the bees are destroyed by burning, the bee-keeper often times gets quite mad at the inspector and all the other inspectors and he may, and quite often does, start in bee-keeping again. But if he can sell them and get rid of them in that way, then his interest or antagonism is not aroused in any way and he proceeds to forget all about bee-keeping.

Now the next class of bee-keeper is the farmer bee-keeper. We find a great many farmers in the class which I have just mentioned, but we also find a typical class of farmer bee-keepers who have from two or three to one hundred or more colonies, and the farmer bee-keepers may be divided into several classes, according to the interest they have and the knowledge they have regarding bees. Usually we find the farmer bee-keeper is willing and anxious to take care of his bees to the very best of his knowledge, but in a great many cases he does not realize that he can secure, free of all charge, from the State and from the government, bulletins which contains a lot of very valuable information and he does not know, in many cases he does not realize that there is such a thing as foul brood. He does not know the value of the use of comb foundation. In brief, his knowledge of bee-keeping is very limited and we find that in the majority of cases, his supplies do not average more than one super to the colony and that he will put on the super often times too late, because he does not realize when the honey flow begins. He does not know the habits of the bees and he does not know when the honey starts coming in, so that we often times find that the farmer bee-keeper is only producing probably one fifth or one-sixth of the crop of honey he might possibly secure. In many cases it is not a lack of good intentions, but it is from the lack of knowledge. This the farmer needs, so that he can handle those bees in better shape. The inspector is often able to help the farmer bee-keeper and enable him to do a great deal of good work by giving him a pointer here and a pointer there, so that those bees can be better cared for in the future.

The great trouble we find with the majority of bee-keepers, with the exception of the specialist, is that they do not seem to realize that the information on the care and management of bees can be secured free of charge not only from their state institutions, but from the federal government. We tell them about the bulletins and where their interest is sufficient and they secure and study these bulletins, we can see a difference directly in the care and management of the farmer's apiary.

Another point where the inspector can often times be of a great deal of assistance to the farmer bee-keeper is in the preparation of materials. We often times find the farmer bee-keeper trying to put up one or two dozen sections or more, without the use of a proper foundation fastener. I have seen many of them putting the comb foundation in the section, and just pressing it down a little around the edges by running a little wax along, without any form. The sections themselves are folded by hand, are not square and if the foundation is not put in just right, it crumples up when the section is placed in the supers, and those bee-keepers produce a very poor quality of honey. The way in which we can help the farmer bee-keepers is by telling them of shorter cuts, better methods, so that they not only save time and work in managing the apiary, but they also secure more profit, and once the apiary inspector has shown a bee-keeper where he can increase his profits, then that bee-keeper is a friend of the inspector's for all time and he is always willing to take further advice, so that one of the main offices of the apiary inspector is not only to remove and eradicate disease, but also to educate. We all know that the disease of foul brood is caused by germs, but a great many of us do not realize that while the actual cause is a germ, there is an indirect acuse which oftentimes does a great deal more damage than the direct cause, and that indirect cause is ignorance and until we can remove from the minds of the bee-keepers that ignorance regarding diseases and management and behaviour of the honey bee, then the apiary inspection work can never be as successful and such a lasting benefit as it will if we can remove the ignorance, so that the bee-keepers can increase their profits.

The older laws just touched on that point. The older inspection laws were based purely on police and penalties. Police laws and penalties were the main features of the old foul brood laws and the inspector has gone into the apiary and found foul brood and the bee-keeper has been given a short time to clean up and in many cases it has been neglected and the inspector on his second trip has come in and destroyed several colonies affected with foul brood. That is one way in which to eradicate foul brood for the time being, but what happens in the mind of the man who owned the bees? In a few cases the bee-keepers themselves are willing for you to destroy the bees simply because they have absolutely no interes in them and they do not regard it as a loss, but in many cases when you go into a man's place and you destroy a certain number of colonies of bees, even though the bee-keeper had not been securing very much, if any, money from those bees, you hurt that man's feelings very much indeed and in many cases you have made an enemy towards inspection laws and apiary inspectors. If you can arouse that man's interest sufficiently to get him to treat the colonies and get him started once on the right road and show him that there is a profit in bees well managed, and then you will not only remove the direct cause, the germs, but you are also removing the indirect cause, the ignorance, and that bee-keeper will always be with you. If you go and burn a man's apiary, that is a cure for that time, but you cannot tell when that bee-keeper will commence again in the future and he is almost every case a hard man to handle, harder to handle

the second time than he was the first simply because he has an enmity towards all inspection and the inspector as well, so that one of the main functions of the apiary inspector is not only to eradicate disease by the direct method, but also to remove the indirect cause and proceed that way.

I am getting a little off my subject, I want to come back to that a little later, so that I will go back to the bee-keepers, and take up the next class and that is the specialist bee-keeper. The specialist bee-keeper usually is his own inspector, because the question of disease is vital and there we see right away the benefits of education. Any man who is securing a profit from his bees, once he realizes what disease is and is able to diagnose disease, that man is his own inspector from then on, and the specialist, realizing that he has a great deal of money invested in bees and that if properly cared for will be a source of profit to him, he rarely calls on the inspector except to visit and inspect some smaller apiaries in his vicinity which may be giving him trouble. So that usually the trips of the inspector to the specialist are frequently visits of mutual value and I might say that the inspector picks up very many valuable pointers from the specialists in bee-keeping. The only trouble is that the inspector usually gets so many calls from the smaller bee-keepers that he is not able to spend as much time as he would like to do with the specialists. There are very few of us who fail to pick up many valuable pointers during the course of a year from bee-keepers. We know this man has one plan that is good and another man has another plan that is good and in that way the apiary inspector himself is always increasing his knowledge of bee-keeping and a great many of these pointers we get from specialists. The specialist takes care of disease himself, because he realizes that if disease is allowed to spread, then his profits are gone, so that the specialist bee-keeper, is very rarely named among the class of bee-keeper with which the inspector has any more to do than to visit.

There is another class that I would like to mention, and I might say that we get men and women in this class from all the other classes I have mentioned, probably with the exception of the bee-keepers who never attend to the bees in any way at all. These are the cranks. Now, I do not want you to take that name crank in the wrong way, because we must remember that Langstroth and men of his kind, men like Charles Dadant and men of the old schools who have found out something that is of interest and value to the bee-keeping industry up to date, those men were called cranks. We can easily imagine that when Hruschka started the honey extractor, that he was called a crank and when foundation was first manufactured, that manufacturer was called a crank, so that we want to look upon the cranks among bee-keepers with tolerance. Most of us, if we are not already cranks, develop into cranks of some kind, we are always dreaming that we can devise some scheme so that we can absolutely control swarming so that we will not have to worry about it. Another man is thinking how he can find out the way to make two queens live in one hive and there is another man devising some scheme of an entrance that will solve all troubles of robbing and another man is developing some

reliable treatment of American foul brood without shaking. We find men in all classes of bee-keeping who dream and it is a good thing to dream too, because I might say that it is pretty hard to accomplish anything successful in bee-keeping unless you think about these things and the more we think about them oftentimes the greater will be our results. The thing we have to guard against is, not be a narrow minded bee crank. We have all met some men who are so narrow, they get one idea and are not broad minded enough even when the idea is found to be useless to acknowledge their fault and proceed along other lines. If we become bee cranks, and most of us will, let us have more than one idea which we will try to solve. Do not be narrow, but be broad minded and if we find that we cannot work out the principle which we had in mind, why, then read up some more and think about it some more and probably you will find some other problem equally interesting and which requires quite a lot of time and thought to solve.

One thing we do know, that is, that we do not know a great deal about bee-keeping today, but we are just starting and there are all kinds of opportunities for all of us to devise a great many things which will be of benefit to bee-keeping and we might find out what has already been tried if we look up some of the old bee journals. We have a great many ideas which we think are absolutely new and we find that they have been tried out many years ago. While we may keep on trying to solve different problems that are troubling us to-day, we must guard against getting narrow and we must proceed along proper lines.

Now, a word about the inspector. The apiary inspector, to be successful, must be first of all a practical bee-keeper. You would be surprised if you visited a few bee-keepers how soon they can tell, in fact it is the first thing they do in many cases. They put out a few feelers, ask a question here and a question there and another question, and they are feeling you out to see whether you are a practical bee-keeper and the only man that can be successful as an apiary inspector is a practical bee-keeper. Theory in bee-keeping is all right, we can read it up in books but unless we have actually handled bees we cannot be successful as inspectors who own and keep bees and who have had practical experience in handling and in that way are able to help the bee-keepers more. As I stated before, apiary inspection work, while its end is to eradicate foul brood, that end can often times be reached a great deal quicker by enabling the apiarist to become a better bee-keeper than we can by cleaning up his apiary right away without telling him why and wherefore and showing him where he can improve. So the inspector must be a practical man and he must be tactful. You would be surprised some times even in this day and age when you go into a man's apiary and you start talking to him about foul brood and he does not believe that there is such a thing. Many bee-keepers do not believe there is any such thing as foul brood and if you do not start out on the right road, if you are not tactful, you can hurt a bee-keeper's feelings considerably and the next thing you know that bee-keeper is hard to handle. But if you are tactful in handling the bee-keeper, then the first thing you know he is interested in the work, and, if the disease

is present, you show him the disease. If the disease is not present, you probably take out one or two frames from the brood chamber and show him the developing bees, telling something of the life history and behaviour and in many cases he will tell you he never saw a larval bee before and in many cases he never saw a bee egg and in many cases he never saw the queen. He never attempted to manipulate the brood chamber. If we once get him started, get his interest aroused, then the disease is really secondary, because as that bee-keeper progresses, the disease will be automatically cared for. So that the inspector can do a great deal of good in that way by being tactful and the master of his business. The inspector does not know it all by any means but at the same time he must know sufficient to be able to help the great majority of bee-keepers with whom he comes in contact.

Now, a word about the old and new foul brood laws. The older laws, as I stated before, were designed primarily with the view of the eradication of foul brood by burning. Now, we realize that if we come around just one season and we start to burn up frames and hives where they have foul brood, the treatment is not lasting and that we do more harm than good, not only to the bee-keeper but to the bee-keeping industry. The aim of our legislation as I see it, should be the building up of an industry rather than destruction, and the only cases where the burning of a colony of bees may be advisable is in the case of the careless bee-men whom I have mentioned, where they have absolutely no interest and in many cases they will tell you they would rather have them burned than kept and even in cases of that kind, if there is a progressive apiarist in the vicinity, I would rather have him buy those bees cheaply, if they are worth saving, and care for them than destroy them. Then we have not made an enemy of the bee-keeper.

The legislation which has been passed the last few years has been changed considerably and the idea of the apiary inspection work being police work, entirely loaded down with penalties has passed away and the newer laws have as their aim and object education and there is the secret of successful apiary inspection work to-day. It enables the inspector to handle the bee-keepers much more successfully than under the old measures. To-day, instead of spending so much time in individual apiary inspection work, and I might say that even in the smaller of our states it would take an immense amount of money a year for sufficient apiary inspectors to be appointed to go around and visit every apiary in the state. That is almost impossible and the newer foul brood legislation has realized that point and to-day the work is being done by other means and quite largely by the aid of the apiary or field demonstrations, which I think were started by Mr. Morley Pettit in Canada some years ago. That is one way in which the apiary inspector can meet ten, fifteen, twenty, sometimes as many as one hundred bee-keepers in a single day and we go out into the apiary and we can show the bee-keepers ways to manipulate the colonies, and the habits and behaviour of the bees and in that way we can arouse the interest of those bee-keepers considerably. I always try to make it a point now when I can choose an apiary in any vicinity where I want to hold a field meeting or demonstration, I always choose one apiary, if we are holding two meetings, always see that one of the

apiaries selected is an apiary that has been well looked after and well managed. If we are holding two meetings it is an excellent plan to hold one meeting in an apiary where the bees have received sufficient care so that it is noticeable to all the bee-keepers who come and then if you have another meeting, arrange another meeting in an apiary that has received no care at all. It is really surprising if you get a bunch of bee-men together in a county or in a vicinity and one bee-keeper questions the other, wants to know what he is doing and how he works things. The first thing you know a great many of them realize that they are not keeping bees as they should keep them and when they see the colonies manipulated and opened up and things are explained to them, and quite often a little later in the season there is a fair to a good crop of honey on the hives of the man who cares for a good crop of honey on the hives of the man who cares for the bees, those bee-keepers from then on get a different idea of bee-keeping and they see the possibilities as they have never seen them before. I have had a great many bee-keepers, who have attended assemblies of that kind, go home and make up their minds that there is something to the keeping of bees, because they have seen, that day, something sufficient to arouse their interest, and the aim of all apiary inspection work should be to arouse the interest of the bee-men. If you cannot arouse the interest of the bee-keeper then you cannot make that man care for his bees or foul brood. Interest is a prime essential in doing thorough inspection work.

Then, besides the apiary demonstrations which are being made a feature in a great many of the states to-day, the inspector can do a great deal of good by sending out to the bee-keepers at critical times in the season a short letter, call it "Seasonable Hints," or something of that nature, that will recall to that bee-keeper at that time that there is someting which he should do that is very necessary to the success of the season. For instance, in the spring of the year it is impossible for us to visit the whole of any one state, or a great many of the counties, but if we can send a personal letter to the bee-keepers telling them that now is the time to do certain things and tell them why. In a great many of the cases, first of all those letters may be opened and thrown away, but as they continue to come, the bee-keeper gets interested and he reads things, and in many cases, even if he does not do all that you have asked him to do, he will do a great deal of it and in that way secure a very much larger crop of honey and become more interested in bees than has been the case in the past. The county demonstrations and the letters which are sent out to the bee-keepers from time to time, help to keep the inspector in close touch with them and also do a great deal of good to the bee-keepers themselves.

Then, of course, there is a short course. The short courses for bee-keepers are of great benefit to them and we will get a great many men who will go to those short courses who will go home and make better bee-keepers. The problems which we find in bee-keeping in the apiary inspection work are not many and we can probably put them down to one or two. The first problem is the lack of knowledge which the bee-men have regarding the life history and behaviour and manage-

ment of the bees themselves. We probably realize that a great many of the apiarists, probably seventy-five or eighty per cent of all the bee-keepers in this country do not own a bee book. You would be surprised if you had a large number of replies from the bee-keepers and you had asked them the question what bee books they owned, how few of them have any bee books at all. Now, how many of us would think of entering into any business with which we were not acquainted unless we knew considerable about that business, or unless we were willing to read up all we could find out about it and know that unless we did that we could never make a success. One of the biggest problems of the inspectors regarding bee-keepers is lack of information, oftentimes because they do not have any bee books or bee-keeping literature to which to refer.

Another problem, besides the lack of bee-keeping literature, which we find with so many of the bee-men is that they do not realize the possibilities that there are in honey production and for that reason they do not make preparations for the coming season. It is pretty hard to estimate the per cent of men who wait until the colonies are about ready to swarm, or one or two swarms go off, before they even think of ordering their supplies, or even if they have their supplies on hand, before they think of making them up and placing on the colonies. We realize, of course, that that lack of preparation is due primarily to lack of knowledge and also lack of interest, so that the apiary inspectors to-day ought to meet those problems. We know, after we have inspected for a few years, that those problems exist to a much greater degree than the average bee-keeper would ever imagine and that a great many of the bee-keepers who keep bees know very, very little about the business. If we keep those problems in mind, then we can work with the end in view of creating the interest, developing the interest of the bee-keeper and then once we have the interest developed, also develop his education and his knowledge of bee behaviour and bee-keeping management and from that time, any bee-keeper whom we can develop to that state will go along with very little help.

I might say that the apiary inspection work under the old laws was very monotonous and a very unpleasant job for the apiary inspector, but under the newer laws where education is made one of the main features of the foul brood laws themselves, then we find that apiary inspection work is pleasant, because we meet with a great many men who are anxious to learn and when we meet with men of that kind and we see them having a successful season and getting a fairly good crop of honey, then we realize that some of our work and some of our efforts have been well spent and that we have accomplished some of the things we set out to do.

One thing that I think we sould remember is this, we all realize that there is a great possibility in bee-keeping as a business. Really it is only just developing. A few years ago there were very few specialists in the country, whereas to-day there are a great many more. But we must remember this, that we cannot expect, we would not expect to go into any business at all without a fair amount of knowledge to run that business and expect to be successful, the same thing applies to honey production. We know there is a possibility in bee-

keeping, because men are already making sufficient to live on and then something to put away for a rainy day. In every case we must remember that those men have worked up from the beginning, they have gradually gained the knowledge that is requisite to continue and enlarge the business. We must also remember that it is pretty hard, in fact it is impossible, for anyone without the knowledge, to start in bee-keeping on a large scale and make it successful. We cannot succeed or make a profit from bees unless we have the knowledge and then we have the interest and we should remember that it takes time to develop these. If we are willing to put into the bee business, the same amount of knowledge and ambition that we would put into any other business, then we have something in the bee business that is not only pleasant and fascinating but will also be profitable as many of the other lines of business. (Applause.)

THE PRESIDENT.—This paper is open for discussion now.

MR. KILDOW.—Mr. Millen spoke about cranks. A crank is the handle by which we make things go and if we have not got that crank to make things go we must quit.

THE PRESIDENT.—Provided the crank is not warped.

MR. DADANT.—There are useful cranks and there are nuisances among cranks. I think we are most of us bee-keepers, we are cranks, but there are cranks among bee-keepers that are really nuisances. I know of a president of a bee-keepers' association—this is not in Illinois, understand—a president of a bee-keepers' association who positively knows that the only thing to do for foul brood, whether American or European, is to have strong colonies. That will get rid of it. It is not so very long ago that I had a discussion with him and he hoped to convince me. I hope to see him again in a few months and find out if he has learned anything different.

THE PRESIDENT.—I can assure you that that president is not in Illinois. Anyone else have anything that they wish to say on this subject?

MR. PITNER.—I am a beginner and I am like a sponge trying to to absorb knowledge in every place I can, and I ran across a bee journal of the Iowa State College that had a correspondence course. I corresponded with Mr. Millen and finally took the course and I received his Seasonable Hints and I think that is a good thing, especially for people who are starting in from the foundation and know absolutely nothing about bees. Really it would be just as good for anybody else, but I mean that people who are trying to work out a process and work out a knowledge of how to handle bees those things are certainly a remarkable help and I just wondered why it was that we do not have in our State Horticultural School here an apiary institute, whatever you call that, I wonder if they have anything along that line. I did not take it up with the University of Illinois because I jumped to the first thing I saw, like a bass after a fly, but if that could be included in the State teachings it looks to me like it would be a big help and also help the State Inspector eradicating a lot of this trouble.

THE PRESIDENT.—I might say in regard to the State University, they did have a course including nine weeks which was given under the Department of Zoology, by request of a few of the students. It

was more along the course of nature teachings than along practical bee-keeping lines, although they did have a bee-keeper that came in, spent about four days with them showing them some manipulations. They have five colonies on the campus at one time when I was over there and three of them had American foul brood, two were free at that time apparently. The man that gave the work, they informed me last winter, had gone to the army and the course was abandoned for the time being, so we cannot expect much help from that source at the present time. Possibly in the future they will devote as much time to bee culture as they do to poultry raising, which is quite an item at the State University.

THE SECRETARY.—I should like to say, Mr. President, that when I come to read proof that there will be a great deal of interest in it when I come to read such addresses as we have just listened to.

THE PRESIDENT.—I must say that I thoroughly enjoyed this talk. I do not know when I have heard an address like this one and one that has contained so much of interest to bee-keepers. It is well to bear in mind the words of the the inspector of Iowa, especially in regard to the educational part of it and I really think that the aim of the state inspector and his deputies should be education rather than extermination.

We have another paper that is not on the program and that is one by Mrs. Kildow.

THE SECRETARY.—It is a prize essay, is it not?

THE PRESIDENT.—I should like to have it go under prize essays, but she insists otherwise.

DUTY OF BEE-KEEPERS.

(By Mrs. Kildow.)

At the present time our thoughts are turned toward war and the results of war; and it behooves every bee-keeper to show his patriotism by work, conservation, and cooperation, as well as by investing in Liberty Bonds.

By work, I mean that every bee-keeper should keep more bees, keep them better, work more energetically, and thus produce more honey. By producing more honey and using it more freely we are conserving sugar, and this conservation is to stand by our government and back up the boys who have won the World's War for us.

Honey is in great demand as a substitute for sugar and the housewives are learning its real value in the culinary line. They find that it is equal to, if not better than sugar for sweeting bread, cakes, cookies, most kinds of pies and desserts. Then it certainly is the duty of each bee-keeper to exert himself that a sufficient supply of honey may be kept on the market to supply the demand. This honey must be of a good quality and put up in neat packages of convenient size, for with the high prices, the housewife demands a good article. And even when the limit on sugar is removed honey will still continue to be a staple article in cooking as it has stood the test.

After conservation comes cooperation. Cooperation is the test of ideal civilization; and in these days men are coming closer to the ideals of cooperation and American citizens are learning that they must not only stand together, but they must also cultivate the virtues of

cooperation of good men. In reality, to cooperate is to join forces, and something more. It is to join hearts as well as hands and slip a little soul in the bargain. One of the greatest examples of cooperation is found in the making of a section of honey. A section of honey is a pound of perfect sweetness encased in a wax structure that is a triumph of architectural engineering. And it requires a little army of bees working harder than Trojans ever worked, sucking the ambrosia from clover blossoms to obtain this honey.

According to Hodges, this pound of honey contains 7,000 grains of sugar and each clover blossom provides about one-eighth of a grain; so this pound of honey represents the sweet fruitage of 56,000 clover heads. But each clover head is composed of about 60 flower tubes and to extract the hidden sweet the bees must probe each tube and this is where the cooperation of the bees takes place, and we see the greatest lesson in the greatest of success-makers.

But this will not suffice, the bee-keepers must cooperate by planning and working together, for the good of the industry, and this is why inspectors and bee-men should work together in the eradication of bee diseases. And every bee-keeper should attend the conventions and discuss and hear discussed the leading bee questions of the day.

Then after weighing these discussions, adopt the things that will best fit this condition. Remember that all theory will not work successfully in your apiary, for conditions are so different in different localities, and the various bee-keepers handle things so differently that you must adopt some things, and discard others. This proves that every bee-keeper should be a thinker.

Still another way of cooperation is to study the bee periodicals and make the thoughts of the best experienced men your thoughts. Then after getting yourself up to the standard, start for your apiary if you expect to gain the one object "More Honey."

To do this put your apiary in good shape; take better care of your bees; strengthen them up and give them good winter protection. During the winter prepare your work for spring and with the early spring be vigilant and pains-taking in the care of your bees and keep this up through the entire season if you expect good results.

THE SECRETARY.—Mr. President, I make a motion that Mrs. Kildow's paper be put among the prize essays.

The motion was seconded and carried.

MR. HEINZEL.—The question box is empty. Has anyone any questions to ask?

MR. PITNER.—I have two questions: Is cane sugar and beet sugar the same, does it answer the same purpose?

Another one is why, in driving bees out of a box-hive, why cannot it be turned upside down. They say it will not work, I want to know why.

THE PRESIDENT.—I will ask Mr. Pettit to answer the last question.

MR. PETTIT.—I do not know, Mr. President. I have not had any experience in driving bees out of box-hives. I will not say that we do not have them in our country. I cannot see why it would not work, providing the entrance is closed so that it is tight at the bottom

that they could not run back to the entrance. It would seem to me like a matter of convenience if a box-hive is as tight at the top as they usually are, to turn it upside down, when you start your driving process they have no means of running down.

MR. PITNER.—I want to explain that we have a little fishing club at home and some of the men had put up a hollow log with an opening at the side, with an end hole and with a board over the top and bottom and with a squirrel's nest in it. The bees drove the squirrel out and I conceived the idea I would like that hive of bees, so I stopped up the opening and, naturally, the top being up I tried to get them out at the top. I drummed until I was black in the face and I got no results. Then I remembered hearing something that one should turn it upside down and I took the bottom off and commenced drumming and the bees came out.

MR. HEINZEL.—I have driven one hundred colonies in a season and I never turned a box upside down. I always drive them through the top.

MR. DADANT.—I think they got pretty well drummed before you turned them upside down. They were ready to go. I am of the opinion that the bees had not been sufficiently frightened when the first attempt was made and by the time the balance of it was done they were so badly frightened and all filled with honey that they were ready to swarm. If they could not be driven out, perhaps it was because their brood was nearer to the opening when they were overturned, that is possible. There was a long space of honey to go over, while in the other case the brood was undoubtedly next to the opening.

THE PRESIDENT.—Don't you believe that the bee would naturally, regardless of the hive being upside down, would naturally go to the old entrance to get out, just the same as you would run to the front door if the house was on fire?

MR. KILDOW.—I do not think it makes a particle of difference. I have handled bees in all conceivable ways, I have never had any trouble. It is pretty hard to force them down, yet you can force them, but it is harder to force them through their natural entrance than it is to force them out through the top. I have had hundreds and never had any trouble to get them to go. Sometimes they will be stubborn for a few minutes.

THE SECRETARY.—I think when he turned the bees upside down they were lost and they did not know of any place to go. Turn a person upside down and see what the result is. I have gone along the road in the front all my life, but putting me at the back side of the buildings, I do not know where I am.

MR. PITNER.—How about cane and beet sugar?

THE PRESIDENT.—Can anyone answer the sugar question, is there any difference between beet sugar and can sugar?

MR. KILDOW.—I understand it is practically the same.

THE PRESIDENT.—At one time there was a little difference between cane sugar and beet sugar, that was simply in the manufacture and in the refining and if you will remember, the housewife said it caused foaming, but that does not take place any more. At this

time there is no difference between the chemical composition of beet sugar and cane sugar.

MR. PITNER.—I have some bees that my folks gathered together, back of the house. They are very cross. The only way I can see is to re-queen them. I am going to ask Mr. Millen to answer a question for me, I want to ask one question, are you sure you could handle those bees all right?

MR. MILLEN.—I have seen a great deal of difference in bees, from the same apiary, that required different handling. I recall one instance of a case in Canada, where the bee-keeper had sold that spring about half of his bees to another bee-keeper and I inspected the half that was sold and they were very gentle indeed, in fact, we hardly needed a veil, or gloves or an other form of protection. Next day I visited the man who had sold this half of the bees, a fine bright morning and very warm, in May, and the bee-keeper whom I visited then started to put on heavy leather gauntlets and tied his pant-legs down and his coat sleeves into the gauntlets, while I had my coat off and was in shirt sleeves. He wanted to know if I was going into the apiary that way and I said, "That is the usual way." He said, "Don't, because the bees will get after you." Sometimes we receive those warnings and we do not take any warnings, we realize the bee-keeper does not always know, but this man had rendered himself so absolutely bee-tight or sting-proof and I thought at first I had better take a little warning, so I did put on leather gauntlets and put my coat on. We could not go into the apiary at all without the bees stinging our leather gauntlets and the leather on the smoker and when we opened the colony, if the bees could have gotten at us we would have been stung to death. Now, this was a case where that bee-keeper had used rough methods all the time. He had always gone out with gauntlets and made himself so sting-proof that he could not tell whether the bees were stinging. The bees he had sold, just before that, were just as gentle as the average colonies to handle. It makes an immense amount of difference with any bees the way you handle them, but there are some colonies, of course, that you cannot handle at all; that is the exception rather than the rule. It depends almost entirely on the manipulation of the bee-keeper.

MR. PITNER.—I want to say in explanation that I do not go at them with leather gauntlets, I go at them bare handed. I did go at them first with gloves. I get plenty of stings on the hands but that does not bother me. I protect my face, but I think that I am inclined to be more or less nervous anyhow, but being among the bees makes me more nervous than ever.

THE PRESIDENT.—Maybe your movements are a little too quick.

MR. KILDOW.—I must tell another story. About two years ago, it was along towards July, I visited a farmer bee-keeper who had bees settling up on the side hill, about forty-five degrees, setting up among the trees. I said, "What in the world have you got your bees up there for, where you have to take a ladder to examine them? He said he had had those bees set out in the orchard before, near the house, and all at once the bees were stinging all over the place among the cattle and all. Then he set them up on the side hill away above everything.

Probably he did not know what was irritating them. I find that is a common mistake among tenderfeet or greenhorns that are working with bees, they have not the knowledge to work with them in a proper way and the consequence is, they get them riled up pretty much all the time; even some of our old bee-keepers have their bees riled up and have to put on goggles when they go out to work among them. I know of one case in Poplar Grove, in the northern part of the State, the bee-keeper was an elderly man and he ought to have been educated to know how to handle bees, but I went over and he commenced to put on his armor and he had it on all right. I was standing looking on, had my hat and coat off. He fixed up inside, he did not go outside to fix up. I said, "Well, are you ready?" He said, "Yes, but are not you going to put on anything?" "No." "But," he said, "they will sting you to death," and he waited to see if I was going ahead. I went out in the yard with him and I saw a string of bees that passed me by and went at him all right. They did not have time to see me, but they were after that man and they found a hole in his armor too. When he got into the house I asked him what he did and he told me that that was the way he always went out. That is the case you find all over the country, they do not know the instinct of the bee, and get into trouble.

MR. PITNER.—Do bees use more honey when the weather is staying like this and they are getting nearly daily flights, does it take more honey to last them through the winter than if they are dormant, would not they be more likely to have food for next spring?

THE PRESIDENT.—Who cares to answer that question? How about it, Mr. Pettit?

MR. PETTIT.—The whole question of the consumption of stores depends upon conditions within the hive. At a temperature of about 57 bees remain quiet, consuming very little. When it goes a little lower than that, they cluster to a certain extent. I would not expect at the temperature that we are having day after day, and all the flying the bees do now, that that would increase their consumption to any extent. If it got warm enough that they started gathering water and started rearing brood, of course it would make more consumption, but as it gets colder, the colder temperature in the hive would tend to make them consume more.

THE PRESIDENT.—Along last Sunday they began to gather water.

MR. PETTIT.—When they start to gather water, I think that they are beginning to rear brood.

THE PRESIDENT.—I found them gathering water on Sunday out in the country where my apiary is located.

MR. KILDOW.—When bees are active it is natural that they would consume a little more, but in this case it is so little that it is not noticeable.

THE PRESIDENT.—If you have them properly prepared for winter, have sufficient stores, I do not think you have any reason to worry. Any other questions? Mr. Pettit, have you anything more you would like to say to us before we close this meeting? Last night I talked to you a little while and you thought you might have something to say.

MR. PETTIT.—I might say that I did prepare a subject.

DEVELOPING A BEE-KEEPING BUSINESS.

(By Morley Pettit.)

Of the different classes of bee-keepers we have perhaps the greatest hopes for the amateur. By an amateur I mean one who takes up the keeping of bees because he wants to, not because his father died and left some hives sitting out in the orchard, or because a swarm of bees came and lit on a tree and he took pity on them, put them into a hive, allowed them to remain and perhaps hived the swarms thereafter. He follows bee-keeping for the love of it.

We have found the most hopeful amateurs amongst the back-lotters, professional or business men who have room in the back lot for some hives of bees, with which they amuse themselves out of hours. Very often the avocation outgrows the vocation and the amateur becomes a professional, and a very successful one. His mental training gives him an advantage.

Success in bee-keeping depends primarily on a knowledge of the behavior of bees under various conditions. You have just been speaking of their activities in defending the hive. Then there is their behavior in swarming, in wintering, in queen-rearing and so on. These various things the interested person studies. He spends his spare hours watching the activity of the bees at the entrance. When weather favors he studies inside hive conditions, the appearance of the brood, the laying of the queen, and so on. At swarming time he studies the conditions under which they swarm. He discovers that when they are preparing to swarm they first have drone brood, then later, queen cells, and when these are capped the swarm emerges with the old queen. Then the winter season comes on and he observes how they form their cluster and dispose of their stores for winter. If he gets a few favorable seasons he learns the supering and taking off honey. If he uses sections he has trouble getting the bees to go into them and perhaps learns to produce section honey. If he gets an extractor he does not have so much trouble, but learns when the honey is ready to extract, and begins on the selling problem.

With the increase of his knowledge, interest and success, his apiary develops and soon his pasture is well occupied. The matter of an outapiary comes up, and with it the swarming problem. If he has not already taken up the control of swarming he must do it now. There are some who drive to an outapiary every evening during the swarming season to harvest the swarms from the neighboring trees, but this is not satisfactory. It is also too expensive to have someone watch for swarms, at present cost of labor. Along with the prevention of swarming our amateur must face the matter of requeening. That is where a number of beekeepers fail. When bees swarm they requeen themselves automatically, but when we begin to interfere with nature we must carry the interference through to its logical conclusion. As swarm prevention prevents natural requeening the latter must be carefully looked after by the bee-keeper.

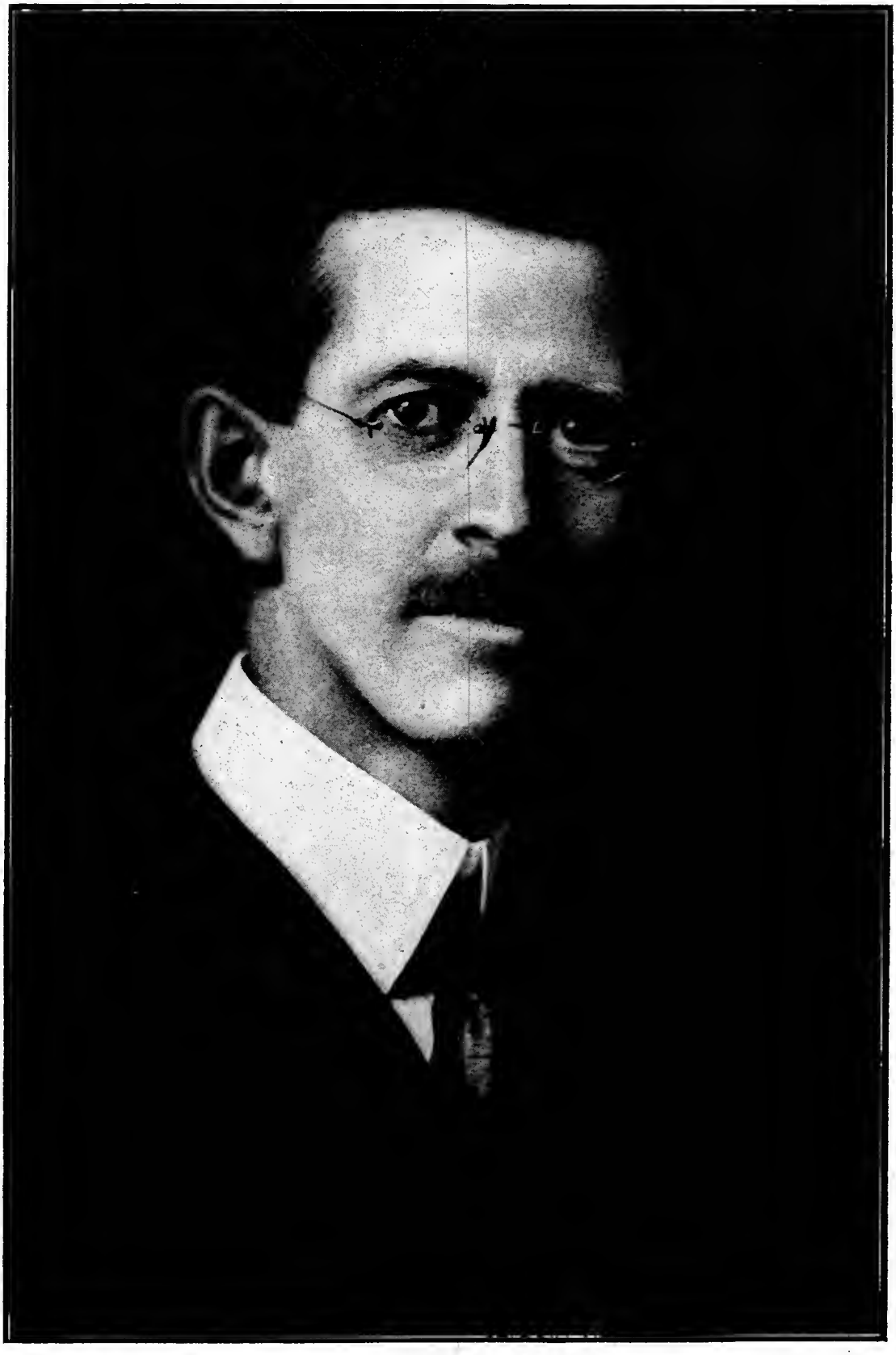
The next point in the business of our amateur bee-keeper is system. At best, bee-keeping is a business of details, consisting of small bees, small units of equipment, and small items of attention. Unless these are organized pretty thoroughly the bee-keeper is going to spend

all his time on a small business with small profits. The remedy is to simplify the equipment as far as possible and systematise the time. In our case the season is short and sharp, much attention that each colony requires must be crowded into a few weeks, and can be given by a professional visit every seventh, eighth or nineth day. So each colony in each apiary has a call from one of the expert members of the firm once in seven to nine days. The expert bee-keeper becomes the physician and the colony becomes the patient. We do not put all colonies through the same treatment any more than the medical practitioner would prescribe the same treatment for all his patients. Perhaps the results might not be so serious in our case as in the other, but they would be serious enough, to my way of thinking. On each visit each colony is examined to see that it has comb-space for both eggs and stores, that its queen-condition is right, that it is free of disease, etc., etc. Thus the periodical visit becomes much more than merely looking for queen-cells. In fact we consider that even if the bees were not likely to swarm we would like to continue the professional visits almost as often as we now make them on account of the regular attention in other matters they enable us to give. This has particular reference to requeening and seeing that the new queen gets safely under way, making increase and also supering. With it all we symplify as well as systematise the management.

With this must go simplicity, uniformity and standardization of hive-parts. We have adopted the 10-frame Langstroth hive as a standard with one type of box for both super and brood-chamber and one size of frame throughout. This is not offering any objection to a larger frame; but we would object decidely to a different frame in the broodchamber from that used in the super.

In locating outapiaries the first consideration is the soil. For clover regions a good stiff clay with plenty of lime in and rolling country is to be preferred. We do not worry very much about whether farmers are growing alsike, for the introduction of bees to such a neighborhood usually increases the sowing of alsike in a very short time. Next the presence of other sources than clover should receive consideration, for they are needed both spring and fall to get the bees in proper shape for the main crop. Then the proximity of other apiaries must be noted, for it is not to our advantage, nor to the advantage of other bee-keepers to crowd a locality. Along with the conditions which go to make a good honey producing location the commercial bee-keeper must consider the roads which couple it up with his other sites. They must be passable for an automobile at times when visits require to be made.

We now have the matter of locating outapiaries narrowed down to the last and in many cases the most difficult point of all—the selection of actual sites for placing the hives. Usually in the best clover regions the land is all owned by farmers who have the most of it under cultivation. Many of them are not friendly to bees and most of them have no suitable place to set the hives. We used to look for a vacant house in an orchard. This provides both an extracting house and shade for the hives. But now the vacant houses are disappearing or being renovated for the hired man, and usually the orchard is under



MORLEY PETTIT.

cultivation. We are coming more and more to place outapiaries near the back of the farm in a small pasture or clearing in the wood lot, and even this is subject to such conditions as being away from cultivated fields on the one hand, and having a lane which is passable on the other. In any case the system of trucking all supers home to extract makes us practically independent of buildings at outyards. The site, of course, should be well drained and well sheltered from cold winds. This is exceedingly important.

For transportation, of course nothing short of an automobile will answer, unless aeroplanes should be adapted for private commercial use. We have found the Ford very satisfactory, and have used a team of two light Ford trucks for bringing home supers; but after using a ton truck last season we would not care to go back to the smaller trucks. It will carry a 50 per cent overload easily, and where roads are good would draw a loaded trailer in addition.

The next point I wish to speak of in reference to extending a bee-keeping business is the matter of buildings. These, of course, are needed for work and for storage. For both they are better to be bee-tight, but where extracting is not done bees do not hunt out the crevices quite so vigorously. The arrangement of buildings will depend on the system followed. If supers go home to extract, buildings at outapiaries do not need to be so carefully built, in fact they can be dispensed with entirely if necessary with no greater hardship than that of setting up some of the winter-cases for storage in summer.

Before the days of power extractors, steam knives, and motor trucks, the extracting outfit was easily conveyed in a one-horse wagon, and the teaming home of supers was out of proportion to the cost of extracting at outapiaries. In those days also barrels were more commonly used for storage. These were filled, plugged and left for shipment from the nearest railway station. In that way the honey from outyards never saw our home, and they made quite a safe package to leave in a building which was away from human habitation. Weighing about seven hundred pounds apiece they were not likely to be carried off. At present our system is quite different. We have at home a building which is meant to be large enough to take care of the supers from all the yards. In it all modern machinery calculated to add to the comfort and speed of the operators is installed. No honey is removed from the hives until the crop is all on, this gives a better ripened product. Supers are then removed by means of escapes, stacked on the truck and driven home. The loose bees not removed by the escapes fly away and return to their hives while the load is going the first mile. At home, the garage is in the Apiary building, which of course is bee-tight, so the load is driven immediately under cover for unloading and reloading with empties. Cappings are removed with steam knives and fall on a melter which returns their honey to the extractor without injuring it. The eight-frame extractor and pump deliver the honey to store tanks which hold 2,500 pounds each. Two men will run five hundred pounds per hour without great difficulty. We enjoy life better ourselves and think it makes hired help more contented to have this work all at home avoiding the moving

of machinery, fixing up old houses, irregular hours and all the inconvenience which goes with the old system.

At the final taking off all supers and excluders are left at home until they can be scraped and repaired so as to be in shipshape for next season. The honey after standing several days to clarify by gravity has all particles of wax and foam from extracting removed and is tinned up in selling packages.

It will be seen that the method described above reduces building space at outapiaries but increases that required at home. This transfers the building expense from rented sites to the home place where the bee-keeper probably owns the land. The central building will need to be much larger than the usual run of honeyhouses. Ours is 24 feet by 40 feet with an upper story and attic, and if we were building again the size would be doubled at least. Above all, have plenty of windows for light and air. Bee-keepers might well take a lesson from modern factory construction in that respect. The plan of the building is quite simple and is proving very satisfactory. The ground floor has three rooms, one eleven feet wide running across one end for the truck, and two each about 11 feet wide and 29 feet long running lengthwise of the building. Of these two, the one next the apiary is used for extracting and the other for honey-storage. The pipe from the honey-pump passes through the partition and is arranged for distributing the honey to the various store tanks.

Upstairs is an office, carpenter shop and store room. The latter has a trapdoor over the garage for handling supplies to and from the truck which stands underneath. Last, but not least, is a small room partitioned off in a sunny corner for a showerbath. This may cause some bee-keepers to exclaim at "frills," but especially in the hot weather we consider it may add fifteen or twenty per cent to a man's efficiency to make it handy for him to get a cool shower in the middle of the day.

After building up the producing end of the business we must not neglect the profitable sale of the honey. This is a point in which many bee-keepers are deficient. They like to work with the bees, and if they do not they are not successful bee-keepers; they enjoy preparing the honey for market; but when it comes to making a good sale they fall down. It is not surprising, for in scarcely any other producing line outside of general farming is the producer expected to be salesman as well. It is an entirely different field of activity, and when we see the supers piling up on the hives with a big crop we begin to tremble for fear everyone else is piling up supers in the same way, and we look forward to a time when we will have to sacrifice the price if we sell at all. As a class bee-keepers are the biggest optimists on production and the biggest pessimists on marketing I know. One reason is an idea which farmers hold with peculiar reference to honey. It is that the price of honey should not fluctuate with market conditions. Because they sold their honey at ten cents per pound last year they think it would be some sort of breach of etiquette to ask their neighbors to pay twelve cents this year. This must be because the bees are not taken at all seriously and any profit from them is looked upon as just that much "velvet" as it were. That is unfortunately a very pre-

valent opinion among the smaller bee-keepers of Ontario, I do not know wether it applies to you, perhaps you are more businesslike, I hope so. Even though recent war conditions have more than doubled prices of honey, many of our specialists are beginning to croak about the fear of ruinously low prices at an early date. This is not according to prospects of a world shortage of all foods for a few years; but is based on the erroneous view that honey must be classed as a luxury. The sooner we kill that idea by good salesmanship the better it will be for all concerned.

The farmer who exclaims at a high price for honey has not the slightest objection to the price of butter or eggs, however high it happens to be. Then why should not honey follow the market as well? Provided the bee-keeper can get over that sentimental idea and look at bee-keeping as a business proposition, the more honey sold at home the better. Even at an estimate of one or two pounds per annum per person, the home town and community of the average bee-keeper will take a large share of his crop by judicious advertising. The producer of anything up to ten thousand pounds scarcely needs to ship honey at all. Such a market has in many cases been developed in a few years.

But for uniformly good prices some form of cooperation is essential. In 1903 the Ontario Bee-keepers' Association tried to organize a co-operative honey selling association, and ended up with a crop-reporting system which alone has meant many thousands of dollars in stabilized prices to the bee-keepers of that province. You can understand how it works easily enough. In one county conditions have been favorable so that a good crop has been harvested, whereas other counties may have a short crop. The man with a good crop thinking honey will be plentiful cuts the price a little so he can be sure of selling. This, in a measure, sets the price and the fellows with poor crops are caught both going and coming. The reporting system gives all a fair start, and when the committee recommends a standard of prices as well as reporting the crop by counties prices are made more uniform. As this report goes to all members of the association bee-keepers having short crops get an idea as to where they may buy honey to supply their regular customers, and in this way distribution is regulated.

The next step, of course, is organized cooperative selling. This is not easy, because bee-keepers lack confidence in one another, or they go about this important matter in the wrong way. Lacking a cooperative selling organization it seems best for most bee-keepers to sell their honey through the established channels of trade: The jobber, wholesaler and retailer.

These are the "middlemen" we hear so much about, and we cannot get along without them. The question is, "Are they to be cooperative middlemen seeking the interest of the producers, or independent middlemen seeking their reward by "profitable" and speculative deals? Even the latter have a legitimate field; but their method of handling the product is not meant to profit the producer any more than is absolutely necessary in order to get the business. Then there are often two many of them getting a profit off the one shipment before it reaches the ultimate consumer.

Some are able to sell their honey profitably by mail. They advertise in local papers in a district where honey is not produced extensively, establish a name for quality and business dealing, have a convenient standardized package, and ship by freight or express. Neighbors club orders to save freight and while the price is higher than wholesale it is lower than retail enought to give the consumers an attractive price.

Now to repeat the points I have endeavored to make in reference to developing a bee-keeping business: One must first study to obtain the knowledge necessary for the successful care of bees. This is got by observation, reading, conversing, attending conventions, short courses, etc. Next the development of a system for solving the three great problems of bee-keeping, viz, The Strength of the Colony (including wintering and spring management), The Integrity of the Colony, (including swarm-control and re-queening), and the Health of the Colony. In establishing out-apiaries one must consider the locality, location and transportaion. As to buildings and equipment a definite policy should be settled and adhered to. Without being extravagant equipment should be adequate for rapid work and the comfort of the workers. Give particular attention to the selling of the crop, for a successful sale of the crop is the climax of and the reward for the year's labor, care and anxiety. I thank you. (Applause.)

MR. KILDOW.—A word or two in regard to selling the crop. Mr. Pettit made the statement that if you had less than ten thousand pounds you would not have to ship. I believe that depends on circumstances. I live in what you might call a rural community. If I had to sell ten thousand pounds at home, I would be about ten years selling it. I have to ship because there is no other way to do it, or else eat it. I cannot eat it all, I do a good share of it. But if you live next to a city, probably five or ten thousand people, you would not need to ship, but in a rural district and with other bee-keepers as neighbors, we must ship, we have no other way to get around it. That is the way it looks to me, so I think you have to take that with a little grain of salt, with the conditions that you are in.

MR. PETTIT.—I think Mr. Kildow understands that I was making that as a general statement. It must be modified to suit the circumstances, there is no question about that. I was only endeavoring to counteract the tendency that so many bee-keepers have to skip the home market and ship it all to the centers.

MR. KILDOW.—Yes, I understand.

THE PRESIDENT.—There is a great tendency among bee-keepers to neglect their home market. They can get a better price if they sell it at home than go to the expense of shipping it.

THE SECRETARY.—When we used to sell honey we waited for orders to come from Springfiled. We had blank order cards on which to get the orders and we would distribute them, give them a blank card every time we took a pail of honey to them and we depended entirely on the Springfield market, those postal cards and a notice on the trees near the front gate, "Extracted honey for sale." We do not have to bring our honey to market, they come right to the honey-house door and try to get more than we can furnish. I have covered up the sign, but still some of them stop and ask if they can get honey.

THE PRESIDENT.—Gentlemen, I thoroughly appreciate the honor that you have conferred upon me by electing me President for the ensuing year and I expect to devote a little more time to the bee-keeping industry of the State this coming year than I have in the past. As some of you know, during the last year I have been chief examiner for the south draft board and it has taken most of my spare time. It was an every day affair all summer, if there was anyone to be examined and generally there were one or two and sometimes a great number, just before the armistice was signed, during the months of October and September I examined eleven hundred men. Of course, none of this eleven hundred reached the front or the camps, but it was a great deal of work. It is the expectation to have a number of field meets this summer in parts of the country where most needed. Of course, that must be left to a certain extent to our State Inspector.

MR. KILDOW.—That is one of the hardest things I have to contend with in Illinois. I cannot get them to come to the meetings.

THE PRESIDENT.—Well, we will have to have a meeting some place and you and I will be there.

MR. PITNER.—We are compiling a list of everybody that keeps bees in our county and every time the inspector wants to come to Pekin, we will see that he has a crowd to hear him and he will have a good crowd too.

THE SECRETARY.—I wish to say a word along another line. I think that by all means the date of our meeting ought to be set for next year and if you propose to leave it with the Executive Committee it will be all right; but for this meeting we had great trouble. We had to correspond with the secretaries of other associations to get the date of our meeting set. We corresponded with Mr. Millen and through him we got on to our Canada man, Mr. Pettit and we agreed then to bear half the expenses of the Canada and Iowa men. We had to postpone our meeting on account of the "Flu," and set it at a later date, and that spoiled our arrangements. The Iowa meeting went on and the result was the same as we have had here, the fear of the influenza kept a good many away and they had about as poor an attendance there as we have had here. Now, if we have our date set, and the other conventions do not want to agree, we are still able then to do as we have done this time. We have to bear all the expenses, we will be as well able then as we have been this year, and if they do not work together with us, why, then we will work apart.

THE PRESIDENT.—Personally I favor the month of December rather than the month of November. I think bee-keepers are usually through with their work, getting ready for wintering, they are more liable to attend a meeting originally set in December than November. I think they have more time and if it is the pleasure of the meeting, leave it to the Executive Committee to set the date, which will be set at no distant time, so that you will have plenty of warning of it. If there is no objection, that will be considered the sense of this meeting.

THE SECRETARY.—We would like to have it set pretty soon, so that we can have it on our letterheads.

THE PRESIDENT.—Yes, we will fix it. Now, I will appoint the Committee on Exhibit at the fair ground. I appoint Mr. Heinzel

chairman of that committee, Mr. Withrow and Mr. Kildow. Of course, the Chair will be a member *ex officio* of that committee and give you all the assistance he possibly can.

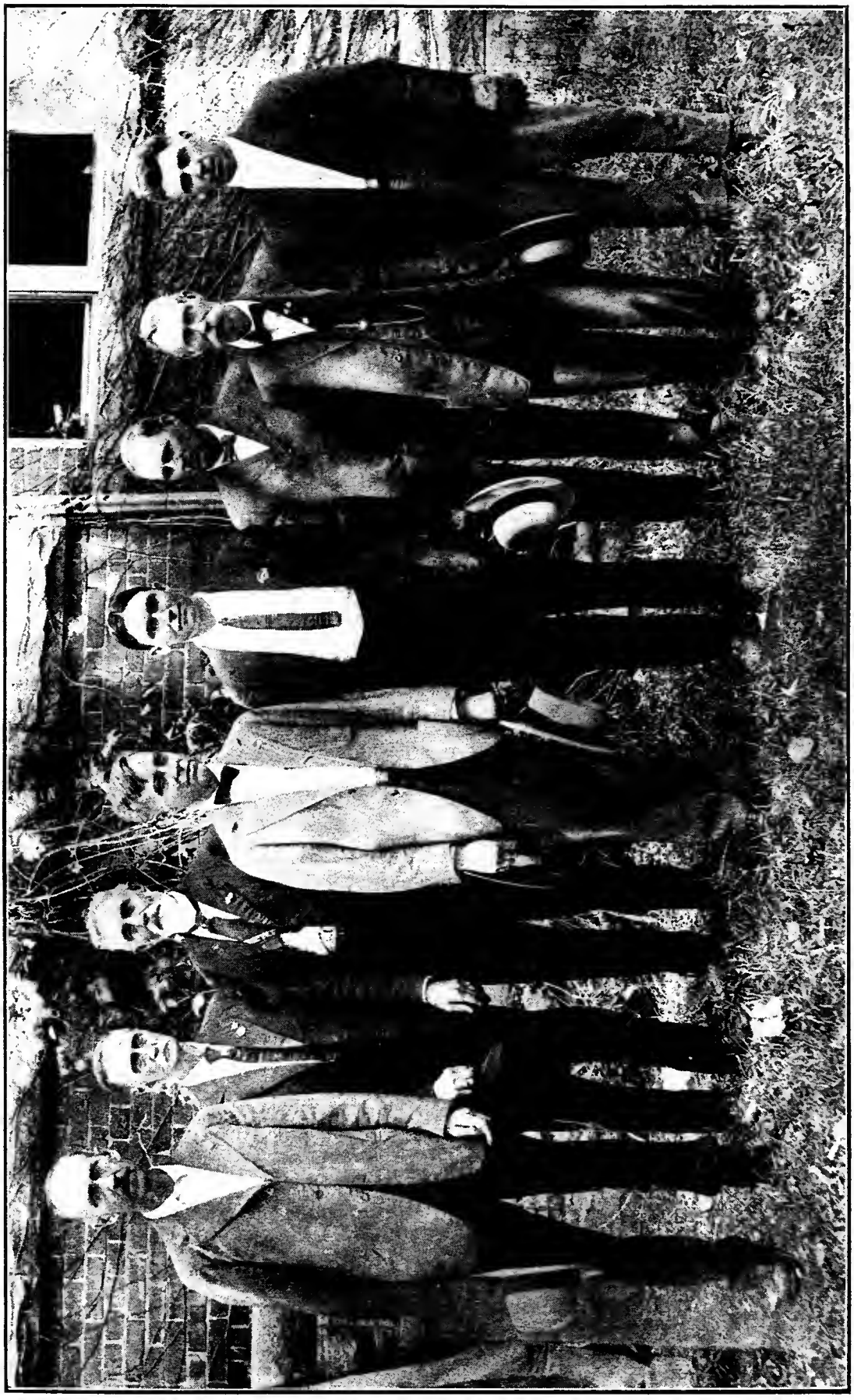
The Legislative Committee is understood to be the Executive Committee, with the addition of the State Inspector of Apiaries.

Any other business? Unless there is some question that somebody wishes to ask, the Chair will entertain a motion to adjourn to meet at the next annual meeting.

MR. PITNER.—I will make that motion, Mr. President.

The motion was seconded and carried.

Adjourned. *Sine die.*



GROUP OF EXHIBITORS AT ILLINOIS STATE FAIR.

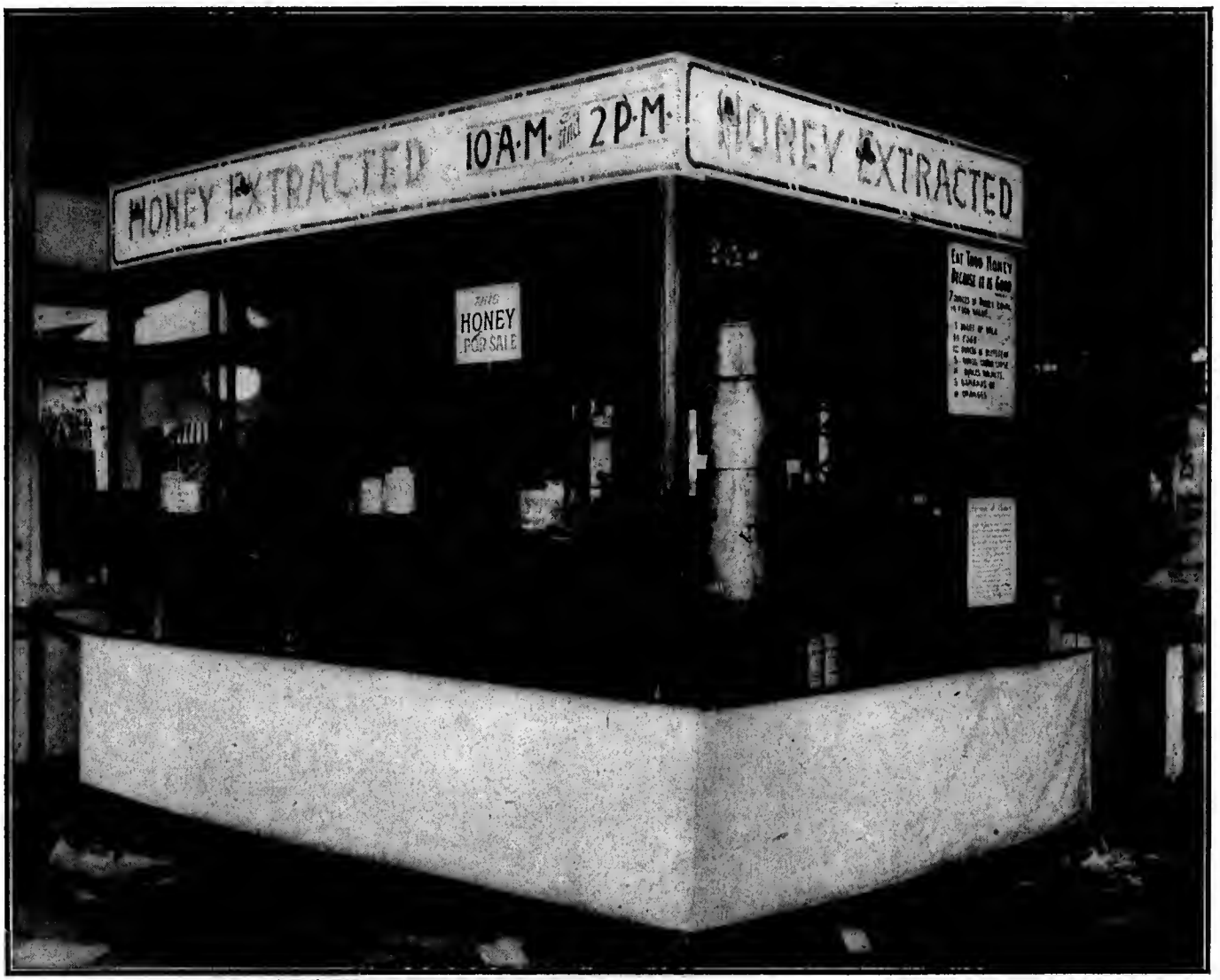


EXHIBIT AT ILLINOIS STATE FAIR.

PROCEEDINGS

of the

TWENTY-SECOND ANNUAL CONVENTION

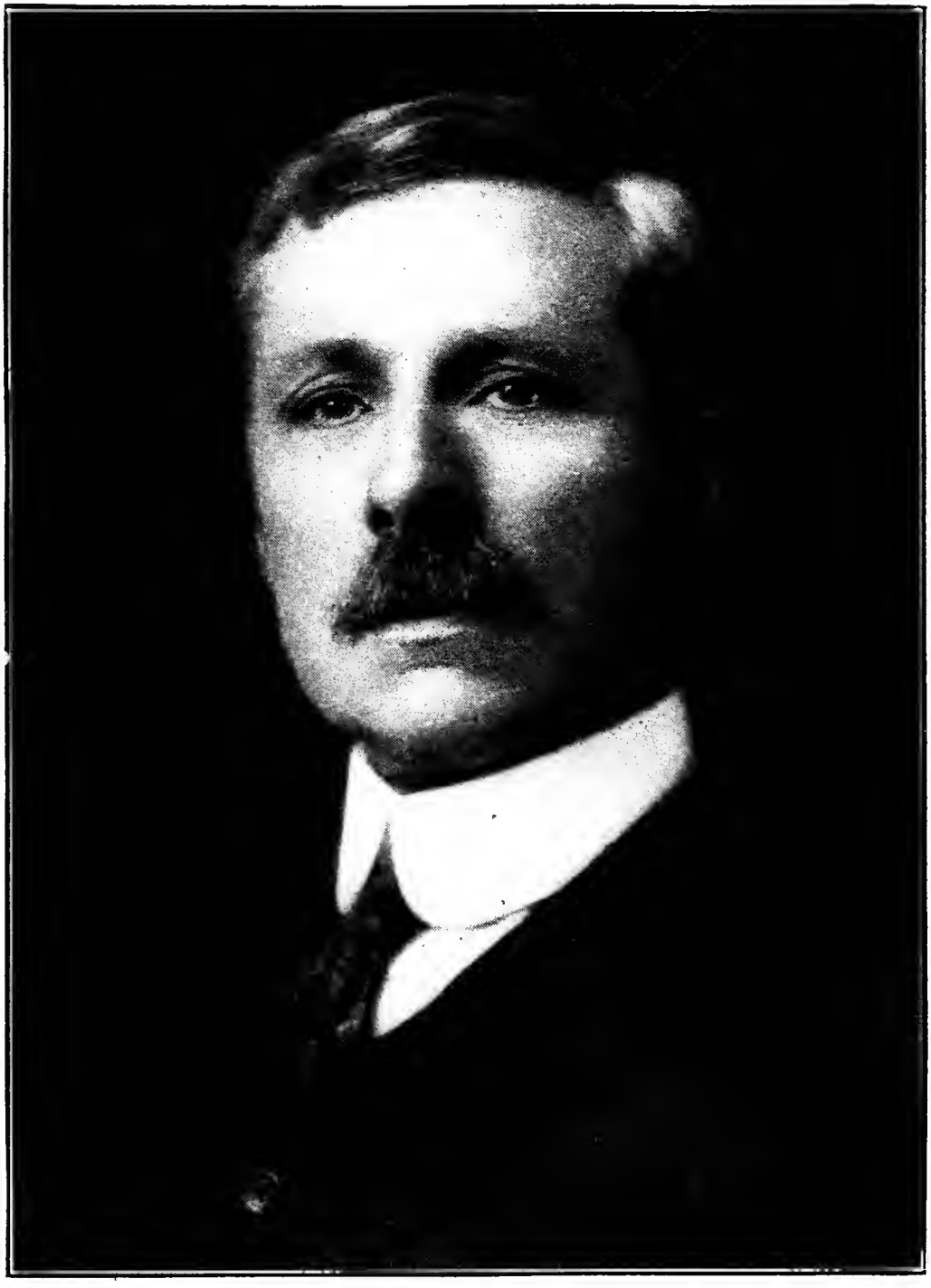
of the

Chicago-Northwestern Bee-Keepers' Association

held at

Hotel LaSalle, Chicago, Illinois

Tuesday, February 18, 1919



E. S. MILLER,

President, Chicago-Northwestern Bee-Keepers' Association.

PROCEEDINGS OF THE CHICAGO-NORTHWESTERN BEE-KEEPERS' ASSOCIATION.

Mr. E. S. Miller, President, presided as Chairman.

Mr. John C. Bull, Secretary.

The meeting was called to order at 10:30 by the President.

The minutes of the last meeting were read and approved.

THE PRESIDENT.—The next thing on the program is the report of the Secretary-Treasurer, Mr. Bull.

THE SECRETARY-TREASURER.—Mr. President and Gentlemen, I don't suppose it is necessary to give any itemized account of this. Printing and postage is the most of the expenses. We started in with $28.62 in the treasury, and we had eighty-two members paid in last year, and we had two donations, one was for $7.50 from the Michigan Bee-Keepers' Association. It was donated as an appreciation of those price letters and to help finance the work along. And the total receipts from what we had on hand for the year was $173.62. Paid out for printing and postage—and this paid out also includes 50 cents membership to Mr. Stone for the Illinois State—paid our $111.60, and the balance on hand up to this year was $62.02. Then there are a few members who have mailed in their membership for this year, about seven members have already mailed in. Those are not included in this statement. We have $62.02 balance in the treasury at the present time.

JOHN C. BULL,

Secretary, Chicago-Northwestern Bee-Keepers' Association.

A MEMBER.—I move that the report of the Treasurer be accepted and placed on file.

The motion was seconded.

THE PRESIDENT.—There will be an Auditing Committee appointed later to go over this work and verify it.

The motion was carried.

THE PRESIDENT.—The report of standing committees. I believe we have only one standing committee, that is the Committee on Prices.

I see only one member of that committee here, that is the Chairman, Mr. Bull. We will hear from him.

MR. BULL.—Mr. President, ladies and gentlemen: There is not so very much to report, except that we mailed out two price letters this last year. The first one was mailed out in August, I think about the 20th of August. I suppose some of you think it should have been mailed out sooner, but you are taking a long chance on guessing when you go to guessing on the honey crop and what the prices might be, so I just held back until I knew where I was at, waited until the crop reports were in so I could see what the crop was going to be, to get some idea of what the prices would be, because we don't want these reports to go out unless we can depend on them, it is better to be sure and safe and take your time about it. It is no use sending out a recommendation unless it is somewhere near right, because if we do we we would get in bad, that is all there would be to it. And the other price letter we just sent out about two weeks ago, the 6th of February I think it was. I presume the most of you have received some of those letters through the mail. We have some of them here too. We did not send out any letter between these two because the prices were nearly the same, except comb honey went up a little bit, but the prices were almost the same thing right straight through. Right lately in some of the markets, especially in Chicago, it has dropped off a little bit, but the other markets seem to be holding up, about holding their own right straight through. So that these prices are the same thing, you will notice, as the first ones, except the comb honey is five cents a pound more. With that exception it is about the same as the report we sent out in August. Those are the prices that mostly all bee-keepers have been receiving, and what the government reports read, about the same as these prices right along.

THE PRESIDENT.—You have heard the report of the Chairman. Are there any questions or any suggestions, any discussion of this? I would be glad to hear from any one interested.

Now, I believe we will have a little extra time this forenoon, and we would be very glad to hear from Professor Francis Jager, who has undoubtedly some interesting facts to tell us. You all know him, he needs no introduction. Mr. Jager. (Applause.)

ADDRESS BY PROFESSOR FRANCIS JAGER.

(St. Paul, Minn.)

Ladies and Gentelmen: This is so sudden. I just arrived from Minneapolis, and I never knew I was on the program here at all. I just came here to listen and to learn what you people have been doing during the last two years. And I must confess that on some side lines I am a little off the track in the bee business, becuase I have not been keeping in touch with you. And over in Europe—I have spent two summers over in Europe during this last war—it was impossible to get any mail from this country. And, by the way, Dr. Phillips wrote to me last July a nice letter, and I just received it last week. (Laughter.) And so you must excuse me if I am not straight up to the mark in matters of bee business. I am just beginning to get in touch with the leading men here, and the honey markets, and other things like that.

But whilst over there, I had my eyes open for the bee industry and for bees, and I found some very interesting things. You know I was exceedingly fortunate in my travels through Europe, I was able to see the bee countries that are most interesting. I saw France, and I saw Italy, and I saw the Balkans, and not only the people, but I saw the three kinds of bees. I saw the black bee of France, down in the French Riviera, which has nothing but black bees, and I was surprised that the French will tolerate the German bee, and I suggest to them that when they clean out all the terrorism and frightfulness, they include the frightfulness of the German bee with it.

And passing over into Italy you begin to meet the yellow bee, and I had the good luck to see the bee-keepers in that land, and further down in Rome I found a famous bee-keeper down there who keeps a hundred colonies on top of the roof of the tallest building in Rome, and makes a great deal of money out of it. It is surprising how the bees will work in the middle of a big city like that. To provide for a place where they can swarm, they have orange trees in tubs on top of the roof, and they say they have to do that because it is absolutely impossible to chase the swarms out, because you will fall off a seven-story building going after them.

And even in the Balkans, we never have heard about the Balkans yet because the country has been closed to all civilized travel up to 1912. You will remember that before that time we read in our American newspapers how the English and American travelers have been held up by the bandits of the Balkans, and held for ransom, and so serious was this brigandage in the Balkans up to 1912 that the country has been practically closed. It had been closed before for several hundred years, because the Turks were in posession of the land, and the Turkish government—of course you know what one might expect from what we have heard in the last four years. It was the land of bloodshed, murder and cruelty, all the way through; a country without law, without organization, without discipline.

This country includes the so-called provinces of Albania, Macedonia, southern Serbia and northern Greece as far as the Olympus Mountains. Now, in 1912 the Serbs, who were anxious for the liberation of their own race, drove out the Turks after a most speedy war, which terminated in 1912, and as a reward for this victory they were awarded the southern part of the present Serbia, generally known as Macedonia. They also were to take Albania, which is all Serbian practically; the northern part of Macedonia is all Serbian. That means the population are Serbs. They were under the Turks for pretty near five hundred years. Now this country has been liberated in 1912 and opened to civil travel, and we were probably the first Americans who ever crossed that country, and really it is a wonderful experience to get inside of a Balkan country.

But you are not so much interested about the people down there probably as you will be about bees, and I found down there that bee-keeping had been practiced for years and years before by the Slavs and the Serbs. The Slavic people really are great bee-keepers. It seems to me that in America we put all the other farm industries first, whereas bee-keeping is really one of the chief industries. Now in

Serbia horticulture is considered the chief farming industry, dairying comes next, and bee-keeping comes third, and they put those three together all the time. It is not a side issue with them. With them it is a great source of income and one of the chief farm products.

I found both bees and bee-keepers of interest. I have several pictures, photographs, some of which I hope I will be able to make into slides, showing what it means to keep bees under adverse conditions.

Now, the Balkan bee is somewhat a new variety. I tried to study them as well as I could, although I was very busy down there, I had little time. The Balkan bee resembles the Carniolan. She is a gray bee, and a little smaller than the Carniolan, and a little more gray, more whitish. They seem to have a few characteristics which other bees have not. In the first place, they are very quiet in the comb, but they follow you with the eye whereever you go. Then the second characteristic is that they are not giving to robbing very much.

I kept a few hives of bees down there last summer. One company was kind enough when I went to Europe to send a whole ship-load of agricultural implements and seeds, wheat, barley, oats and corn, and plows, seeders, discs and threshing machines, a ship load, and there was a little room in the ship just big enough so that they could put in ten bee-hives, all complete for comb honey production, ten Root Frame hives; they were packed five and five. Five were stolen away, somebody found that they had a good thing, but five got over there, and as soon as we arrived in Salonica from the ship I had those five sent out to our camp, took them apart, and had them put together by a Serbian carpenter, and you should have seen those poor Serbian soldiers down there.

Now, to explain to you what they were doing down there, we went there to help the Serbs to cultivate the immense field of land located around the city of Monastir, about which you have heard before. Monastir was probably the most bombarded city during this war, with the possible exception of Verdun. Verdun in France was bombarded for several months, but Monastir has been under fire for four years steady. There was never a day when they did not fire into it.

Now, Monastir is located aganist the hills, against the mountains, right in the corner. The mountains rise behind Monastir, up to the height of 7,000 feet, but on this side is a beautiful plain, through which flows the river Cerna. The plain contains something like 171,000 hectares, or about 300,000 acres of land, and it is a beautiful fertile plain, something like our Iowa fields, just plain, level alluvial land.

Now, this land has been lying idle ever since the war commenced. Before the war the native population, which consists of Macedonians or Serbs, were cultivating their little patches of land. Of course they had to pay a terrible duty to the Turks, whose only work in Macedonia was to collect taxes. Still, the people cultivated some land up to the time of the war. Afterwards they let the whole thing go, and the cultivated land has grown up in weeds and the uncultivated land in grass. The intention was that the Serbian givernment, which now owns this land, was to break up that land, put it into crops, and feed

with the proceeds the civilian population, the starving population of those countries.

In addition to the native population in Macedonia, we had down there thousands and thousands of Serbian refugees, who were driven from Serbia in advance of the armies. The people ran away from the war, and the battle line extended as far as Monastir, within two miles of Monastir. Then it extended right across the beautiful plain that I was speaking about, cutting it in two. One half was in Austrian hands and the other half remained in Serbian hands. Then going across the plain the battle fronted then over the mountains down towards the Agean Sea. Now this Balkan front was 400 miles long, commencing on the Adriatic, over to the Agean Sea, east of Salonica, and it was about the craziest front that you can imagine, a regular crazy quilt, because the nations on the allied front came from every quarter of the earth. A piece of the allied line on the south side was held by the Italians, then another piece of the front was held by the French, another piece by the English, another piece by the Serbs, another piece by the Australians, another piece by the Arabians, another one by the Senegambians, one by the people of Mozambique, another one by the people of the South African colonies. A part of the army down there consisted of Indian troops, from Indian. There were troops from New Zealand, from the Congo—well, I think we figured that there were seventeen different uniforms down there, not to mention the Greeks.

Now on the other side, facing the allied armies, there were the Austrians, the Bulgarians, the Turks and the Germans. The Germans sent some crack regiments down from France and from Posen and some other countries. We captured lots of them.

Now, we had to move with our machinery into the southern half of the Monastir plain, and the Serbian government kindly turned over to us a Turkish city; they gave us the key to the city, and they told us not only to hold it for a day or two, like Mr. Miller is holding the keys of Chicago here for a day or two, but they actually turned it over to us for keeps. The name of the city was Kremljani, and it had the wonderful distinction that during the time before 1912 it was the headquarters of all the Balkan bandits. There was the house of the bandit chief and his staff, and practically the whole robber gang of the Balkans, who made their raids into Greece, into Albania, into Montenegro, into Bosnia, into Bulgaria, and north into Austria.

The city had about 8,000 inhabitants before the war. It was built of brick and adobe clay, and mostly one-story and two-story buildings, with a prominent building for the chief. Is it time to stop? I understood I had ten minutes.

A MEMBER.—No, go on.

ANOTHER MEMBER.—You have until one.

PROF. JAGER.—I haven't commenced to tell about bees yet, but you could not understand this whole situation about bees unless I told you about the country first.

We took possession of this town in the name of the American government, by hoisting the American flag on a 100 foot pole which the commanding general of the Serbian army had cut up in the mountains somewhere about 8,000 feet high, and about fifty soldiers with

ropes and chains let it down the precipices, the road twisted so they would have to bend it in the form of a letter S to get it around the curves, and they let it down, and one day brought it in with the compliments of the chief commander of the Serbian army. So we set up our post in the middle of our camp in Kremlzani and hoisted the American flag, and took possession of the town and about 20,000 acres of land surrounding it.

Now why we did this was because the people of Kremlzani were bandits and Turks, and just as soon as the Serbs drove out the Turkish army they took possession of this city, and the Turks were so stubborn and so cruel and bloodthirsty that when the Serbs came into the town and occupied it they found two Serbian soldiers roasting over a fire on a spit, and out of vengeance they set the town on fire, when everybody who was in any way implicated in this murder, and the rest of them, women and children, all those people escaped into Turkey, skipped across the border, whoever remained alive after this ruining of the city skipped into Turkey, and then turned and fought against the Serbs through this whole world's war, so the town was absolutely deserted, and they presented us with the whole thing. It was ours. For the first time in my life I was the owner of a city and the sourrounding territory.

Now, when I say "city," I mean just piles of bricks. Once in a while you could see a door or an entrance or a wall or a roof, but you would see nothing but ruins wherever you went, and among the ruins was a great deal of ammunition. We found hand-bombs and grenades, and it was dangerous to dig, because you might strike some explosives. So we started our camp right next to the town, and started to build our own city, and just drew our bricks and stone and materials from the ruined town. We constructed our barracks and our tents and our magazines and our workshops for machinery, and got our engineers and other people to work, and our machinery and other things were coming from Salonica, where they were unloaded from the ships. There came up altogether something like 250 cars of stuff that had to be hauled over to our camp in automobiles, we had acres and acres covered with that, and by-and-by we had to erect buildings and store those things, and erect our workshop, machinery shop, carpenter's shop and blacksmith's shop and other things.

Now, where did we get all this help? The commander of the Serbian army gave us not only the site and the surrounding territory, but they were very kind to the Americans. You see an American in the Balkans is looked upon as just a few inches below Wilson. President Wilson is conceded to be the greatest man that ever lived. No matter where you go, just mention Wilson and there is a hurrah everywhere. If you mention Italy, nothing doing; mention France and England, there is not much enthusiasm; but just mention Wilson, and you will see them go off every time.

Now, Americans, coming from Wilson's territory, of course were received with great honor and great respect, and given all the privileges of the country. So the commanding general of the Serbian army told us: "Whatever you people need in the line of help, you just tell us your wishes, and you can draw from out army for mechanics, for

laborers, for carpenters, for blacksmiths." Of course they told us: "As much as possible, try to ask for people who are not fit for actual battle, those who have been wounded or have a couple of fingers knocked off, or are minus a jaw or a leg or something like that, if you possibly can, use those, if they will do just as well." So the Serbian army picked out for us 150 Serbian soldiers, and I went out in the highways where they were repairing the roads—the roads have to be built new down there every month on account of the terrible amount of traffic, ammunition and supplies, that go to the army, to and from. Those roads are all Macadam. They put about six inches of crushed rock on them every month, and they roll it, and next month of course the road is all holes and all gone to pieces.

Now for this lovely job of crushing rocks and shoveling the road and leveling it up and putting some dirt above so as to pack it more tight, they used for that the German, Austrian and Bulgarian prisoners, thounsands and thousands of them they had down there, working in gangs of about a hundred or two hundred, and all about a mile apart. And I drew for the rest of our help from those. When I came to one of those gangs I spoke to them in German and spoke to them in Bulgarian and asked them were there any mechanics there, or any men who could do carpenter work or blacksmith work, and of course a few raised their hands, and I found among the Germans some very good blacksmiths, some very good workshop men, some very good mechanics. I found men who had handled machinery before in Germany. Whenever I found those, I picked them out, lined them up on the side, and the commander sent a soldier with a gun and "Face about, march"—marched them down to our camp, and they were finally transferred into our command. In our camp we had twenty-seven soldiers from France standing around watching those fellows work. Now, all we had to give those men was some bread, some potatoes, and a little meat, all their meals, that was the only pay they got. We had pretty nearly two hundred people working in our camp this way.

Now, while the work in the camp was going on and while I was traveling around those fronts, up and down for a hundred miles, in our little Ford—by the way, the Ford is the official automobile of the Balkans; they have nothing else down there, or they have about fifty Fords to one of some other pattern. In fact, if you see some other car coming you look, while you never look at a Ford, it is such a common thing around there. And they use them this way, they run them until they are knocked to pieces and then get new ones.

Well, we had our Fords, and we went around, and in my travels I met those bee-keepers. Now, our camp was within eight miles of the actual front, right behind the second line trenches, and the view was most beautiful. We were down in the plains, like you stand in a pitcher's box. Then the mountains were rising on three sides, just like the grand stand in a baseball park. We were standing in the pitcher's box and watching the grand stand, and there along the grand stand the battle was raging, cannons fired off and shells exploding and skyrockets going up, and the road was crowded with wagons carrying up ammunition and food supplies, one stream going up and one going down. The road was right in front of our camp, and we sometimes

could not sleep because there never was five minutes of time through the eight months that we were down there that we did not hear the "boom, boom" and the shaking of the air with the explosion of shells and cannon. Never by day or by night any rest. We got so used to it that after I came back for about a month I was actually lonesome, it felt so dead, after we had been through this great excitement of shelling and bombardment.

Now, this was horticulture under spectacular circumstances, but still more spectacular was bee-keeping under those conditions. I found one of the most interesting bee-keepers right in the city of Monastir. Now, you can't imagine how Monastir looks. It is a town of 70,000 inhabitants. It was all built of stone and brick, modern buildings, with beautiful rooms, and fixed up just something like any other beautiful modern city in France or anywhere else; artistic, in fact, with beautiful churches, mosques, and beautiful boulevards, and hotels and everything else.

Now, it was under fire for four years. The Bulgarian trenches were right up on the hill, two miles behind Monastir, so you know it was completely at their mercy. They demolished the town, and for this reason the French and the English and the Serbs never entered Monastir. Their supplies and their armies and their cannon always went around Monastir, because the moment that the Bulgarians saw one wagon or one automobile with men in uniforms, or any soldiers or officers entering the town itself, at once they opened their fire on the city. So the only way really to keep the whole town from being completely destroyed and innocent people being killed was to avoid the town, and the allied armies passed around it, because inside of the town still remained 10,000 women and children; very few men. These are the women and children who could not get away; women and children who had no wagon, no horse, no means of conveyance, no place to go to. They were absolutely compelled by necessity to remain there.

Now the city is practically ruined. The first year of the war ruined it. You see the battle and the war went over the town itself twice; the Austrians had it once, then the Serbs, and then the Austrians had it again, in addition to the Turkish war before. Perhaps there is one-half of a house left standing and the other in ruins; sometimes the roof knocked off, sometimes a corner knocked off. But not a single house in the city had any windows; they were all smashed. There is nothing but brick and stone and ruin everywhere. And just to strike the fear of German frightfulness into those innocent people—Germany always works with fear, they try to make you scared, bring fear home to you, this is their only way to convince you—as a rule they dropped every day an average of twenty-five shells on the city for the last four years, just to put the fear of the Lord in those people in the city. Every time they shot, of course they killed some people, not as many as one would think, but one Sunday when I was there a shell fell in front of a little girl about ten or twelve years old, where she was walking down the street, right in front of her, and smashed her into pieces; there was nothing left but blood marks on both sides of the street. A couple of days before that, twelve women were washing down by a creek, went

down to the creek to wash their clothes, and a shell fell right in front of them in the water and killed ten of them. And in this way they killed many thousands of them. Mostly it was innocent people, who had nothing to do with the war.

Now, in this city of Monastir, right on the outskirts, next to the depot—the depot has not been used for four years, no train ran into the depot for four years, and the bridges have all been ruined—next to the railroad there was a beautiful little garden, walled in on four sides, about ten acres of land. In there were apple trees and fig trees, pears, peaches, potatoes, a beautiful garden, just like you have here, or like you would wish to have. And in one corner stood a two-story brick house, leaving a place about as big as this (indicating) between the wall and the house, and this place, walled on two sides and protected on the third side by the dwelling, or the house—which, by the way, had five shell holes in it, with the roof knocked off partly and four or five rooms entirely ruined—in that corner there I found forty hives of bees, and the man who kept those bees was a little fellow, about so high. His name was Otsevitch.

Now, the hives resembled a trunk, one of those trunks with two handles on, one on each side. You close the lid down and lock it up. Just the size of one of our trunks. Into that trunk were fitted frames of the Jumbo size, all made at home, a frame with foundations, which that man is making himself from some Italian patterns. The foundation is about a quarter of an inch thick, and weighs about a pound per sheet, but any way that man is progressive enough to realize that he must have foundation. He made the frame himself, and the foundation, which he showed me. He was proud to show me that he was doing something. Then he realized that he must have that foundation strenghtened, and he strung wires across this way, then strung the wires on the other side of the foundation, first on this side and then on the other side he put wires through and tied it together. Well, that is the idea, you see he is working along the same lines, he is reasoning out things. He does not know anything about American ways, but still his instinct is leading him in the right direction.

Now those frames hang down to the bottom of the trunk, about that deep and about that wide (indicating), regular barn doors. And that is the way he breeds his bees. In the spring he puts four or five frames just where the bees would come in the center, puts a division board on each side, and packs it with hay and straw on both sides to keep them warm. Then when they increase he moves the division board and keeps adding frames until the whole box is full, and they hold twenty-seven frames, twenty-seven Jumbos. He removes the outside frames and he extracts the honey. He made an extractor himself, he read something about extractors and he manufactured one himself out of old sheet iron he got from the French, out in the battle fields, he picked up loose pieces, and with a little file and a hammer he fixed for himself an extractor. I can't describe it to you, but it is a most wonderful little thing. It is like a coffee-mill, it turns by hand. And he took out of those frames, out of those forty hives—I figured it out in American money—the honey that he took out of those hives would amount to something like 140 to 150 pounds. That is

what he took out last August, and he told me that before winter he was going to take out some more, because those hives were really so heavy that when I got hold of that trunk on one side and he on the other we could hardly lift it.

He makes vinegar, I saw barrels out in the sun. He said he wanted to make honey vinegar. He had barrels standing out in the hot sun. He gave me some to taste. We used it in our camp, and I will say that the vinegar has nothing on Dr. Reynolds' that he made up in Minnesota.

Then I learned something else from that man, which probably would not be worth much after the 1st of July is here. He is making honey wine. He makes it like they make the regular wine, and puts it in barrels. He gave me some of that wine to taste, it was five years old, and it looked to me as though it was very good, and he says he knows even how to make stronger drinks than that. You know the idea of prohibition has never reached those countries, that is a country which has never heard of temperance or prohibition, so don't blame them for it.

Now, I made arrangements with this man that I was going to buy from him three of his hives. In the mean time our Root hives came from Salonica. I had them all fixed up and painted. When Mr. A. Root sent me those hives he evidently foresaw that I would have to have paint, so he sent me a little 50 pound keg of paint to paint those hives with, because in all the Balkans you could not buy a pound of paint for a thousand dollars, nor a brush. I had those hives beautifully painted, fixed up, a foundation put in, and wire, and then I went to Monastir one Sunday afternoon to bring those bees into our camp. It was ten miles to Monastir, straight along the front, parallel with the front.

Getting into Monastir, you know, was no easy job, because the Bulgarians and their cannon were within two miles, and the road that led into Monastir was just as straight as a bee line. It was full of shell holes, which they repaired at night. Automobiles and wagons went into Monastir at night, in the darkness of night, when there was no danger of being hit. We knew that the Bulgarians never shot at civilians when they showed a red cross on the motors, when there was a big red cross somewhere they did not shoot at them, anyway they did not do it when we were there, so we painted on the roof of our automobile a big red cross, and in front and at the sides, and then we took off our uniforms and put some camouflage on to look like peasants, and we went into Monastir, started by daylight. We went many times. I made six or seven trips into Monastir, all by day, always getting nearer and nearer to the Bulgarians, all the time expecting that a shell might drop right in front of the automobile. Well, it is an excitement. I believe if you were there you would make a trip every day, it is so exciting, and they never did us any harm. But two American doctors, Dr. Kyse and Dr. Flood, I guess one was from Chicago, two lady doctors, went down one day, and they began to shoot at their automobile, they fired three shells which fell within 100 feet, and the poor ladies got out and ran behind the rocks, and they spent the whole afternoon behind the rocks before they could get

away. They were awfully scared, and said they would never come to Monastir again.

Now it was cold, and there was a box of hay there, and I got those three hives and put them into the box and took them over to our camp at Kremlzani, ten miles away. Now, when I asked Otsevitch how much he wants for those, "Well," he says, "to tell you the truth, I can sell those for 300 francs apiece," that is, a bee-hive, "but you being Americans, I would not take a cent; I want to make you a present of those." He said: "If you possibly can do something, or if you want to do something, send me some American newspapers, or pictures or books that have anything about bees in them. If I cannot read the language, I would like to look at the pictures." So I have made arrangements now to send some American books, A. B. C. and Gleanings and bee journals and so on, which will be a genuine treat to that man. It is too bad he is not even an American, because he is just thinking about how to develop, how to grow, how to improve, and there is nothing there to encourage him. I told him after the war is over if he can afford to come over to America and start bee-keeping here somewhere he would make a good one.

A MEMBER.—What price does he get for his honey?

PROF. JAGER.—Honey there was something like $1.25 a pound, in Paris $1.50, and in Milan I found white comb honey that they imported from America which they were selling in bottles of that size, I should say six ounces, for 50 cents. It was not more than six ounces.

I transferred those bees from the big trunk hives into our American hives, the three of them. You know how that shook them up. They stayed right there, went to work. Now this honey down there is beautiful, the so-called hymetus honey. There is nothing in this country I ever tasted so good. It is the famous honey that Virgil describes, the Hymetus honey that the Gods and Goddesses on Olympus used, I suppose. Those bees built up the foundation, drew it out, and the remarkable thing now is here. In the plains where we were there was no rain since May 1, and when we were there in August the plains, the grass and weeds, were absolutely withered and dead. There was not a green thing anywhere in the whole place. The heat was 110 and 120 day after day. The ground was just burned. I must confess I never went through heat like that in all my life. And yet in the middle of that plain, without green grass, without a flower, except some thistles grew there, I could not see a bee work in those thistles. I went around our camp for a mile, watching and looking where in the world I could see one bee at work. I could not see this summer one of my bees at work, I confess I did not. And yet in those three hives they were drawing out foundation, then they began to store honey, and in three weeks I was able to remove a couple of those outside frames with white capped honey. In fact, when I left in October I took out all the frames that were superfluous, they were really honey-bound, and cut out some of that honey for the boys that remained behind, and it was nearly a wash-tub full.

Now, where did those bees get the honey? They got that honey from the mountains. The valley was surrounded by mountains, up to 9,000 feet hight, and every afternoon the clouds gathered around

those mountains, and they have thunder-storms and rains up on the mountains, but those clouds never once left the mountain. Just as soon as a cloud attached itself to the mountain, it disappeared, it was raining up on the top of the hills. We were up in the mountains, and it was beautiful, green, flowers everywhere, carpets and carpets of flowers, and the prevailing plant was Thyme, a small kind of Thyme, so that when you walked the aroma of the crushed plants would be on all sides. There were plants that I don't know, but it was like a carpet, a beautiful thing, I never saw anything as nice as the hill tops and the valleys among those mountains. And from the valley the bees had to go and climb up those hills, away up, and bring the honey down in the valley, that is the manifest truth. The next green spot to our camp was eight miles away.

A MEMBER.—How far were the flowers in the mountains from where the bees were?

PROF. JAGER.—I judge about eight miles that the bees had to go. I can't see possibly where they could have got one flower nearer than that, because I went all around those hills, I was taking pictures, photographs of all kinds of things, especially pictures of soldiers that were killed in the battles around there; they were somewhat dried up by the heat of the sun, some were skeletons. I took pictures of many of those, and looked for flowers, and never found any.

A MEMBER.—Did you happen to stumble on that location, or were you sent there?

PROF. JAGER.—No, we knew about that place. It was the same with that place in Monastir, he said his bees had to go about three miles up in the mountains.

A MEMBER.—Was there any difference in the bees that you took there and the ones that you found there?

PROF JAGER.—They were the same bees, the Balkan bee.

A MEMBER.—I thought you tried out some from here, and some you got there too.

PROF. JAGER.—It was the gray Balkan bee.

A MEMBER.—Do you think that the locality several miles from there is as good for producing honey, that is what I was trying to get at.

PROF. JAGER.—Well, if I was keeping bees down there I would take them right up in the mountains.

A MEMBER.—Any direction you might go?

PROF. JAGER.—Any direction you might go, because those mountains are a wonder—a wonder of flowers. I saw some like that perhaps in some places in the Rocky Mountains. While I was working with those bees they never robbed. The frames I cut out, I put into a box next to the bee yard, with the idea that they would get the honey. They never touched it; they just kept going up in the mountains. Now, this Balkan bee would bear a little more investigating. I brought one bee with me a year ago, I introduced her to my apiary in Minnesota, and then I told my man who had charge of my business last summer, I marked the hive and said: "Pay particular attention to that Balkan bee, so that she does not perish." When I came back he told me that he did not know where she was. I could not find the marked hive

either, so there you are. The fact that the marked hive was not there might argue badly for the man who kept them.

Now, this country down there is really a country which the American people ought to be interested in. It is probably the richest country—Macedonia, the Balkans—probably the richest country in the world. Now I say that intentionally, knowing what I am speaking about. That country has never been opened and never been developed, and why Germany and Austria were so terribly after the Balkans, to get hold of them and why Italy now is so crazy to get over and get hold of them, is for this reason: In their natural wealth there is no country that can compare with them. In our camp, in those 171,000 hectares of land, we were digging wells to get down to drinking water. The first thing we struck below the ground was one yard of coal. Then we struck another yard of coal a little lower, and about ten feet from that we struck a vein of coal which went fifteen feet when I left and never reached the bottom of the vein. Now, that whole plain is underlaid with coal all the way through. There are out-croppings of oil in different places. Then up in the mountains that I have been describing, beside the flowers and the thyme that grows there, is the wealth inside of those mountains, because those mountains are a solid mass of iron. I saw the Mesaba range in Minnesota, and the wealth of iron in those mountains surpasses Minnesota. We brought with us pure crystals of magnetite, which you can pick up anywhere in those mountains. Imagine a field of coal like Pennsylvania, surrounded by iron mountains, like the Mesaba range, coal and iron brought together, and there never has been a chimney smoking on those plains from the beginning of the world. Where the shells struck the hills back of the Bulgarian lines, a place perhaps ten miles square or more, there were veins of quartz going everywhere, and when a shell broke it up we could see beautiful yellow outcroppings of gold. In fact, in the quartz, where they were crushing their stone, you could pick up those stones and you could see free gold anywhere. I brought samples with me, because they were telling me it was pyrite or something. I brought it with me to the University of Minnesota and had it analyzed, and they told me there was twenty-two ounces of gold in that sample I gave them.

They have their copper mines, which surpass probably our copper mines in Minnesota and Michigan. One copper mine is so rich that it is difficult to mine, because the pockets of pure copper are so extensive that they cannot blast it. They have lead, and sulphur, and mineral springs, and timber, and water power, the whole country is one wealth of mineral and power from one end to the other.

Now, when you remember that Italy has known, France has known, Germany has known and Austria has known of all this, and when the Ural mountains and the northeastern part of France are the only other places where ore may be found to some extent, and nature has piled it down in the Balkans in inestimable amounts, so that it cannot be figured out how much there is down there, now you understand why everybody wants to have posession of the Balkans, and why there are so many wars down there. It is just a war to see who is going to have it, and the Jugo-Slav nation, which lives there and which is now

establishing its own kingdom, some day will be the richest nation on the earth.

Well, we did not get killed and we did not get wounded, but the Bulgarian aeroplanes were very curious to find out what we were doing. They used to come down, the first three weeks, when we were unloading our machinery, they came at ten o'clock in the morning and about two o'clock in the afternoon, I suppose to get a picture from the two angles of the sun, and their photographs must not have turned out well because they could not make out what kind of war machines we had, they were not cannon, they were nothing else that they could determine, so one morning they came at five o'clock in the morning, just when the sun rose, flying on, 300 feet above our heads. We heard them come, we woke up. The French had anti-aircraft guns every three or four miles, or two or three miles apart. They started to shoot them, and there was a bombardment, and the shooting came nearer and nearer, and we all jumped up—we slept in tents, we had nothing to sleep in but tents there— and looked at those. They came right straight over our heads, and a couple of them dropped down, one next to the tent of our prisoners, one next to our mess tent, and they never came again after that, because they saw the American flag and they saw our machinery. Since America was not a war with Bulgaria, when they saw the American flag they supposed probably that it was to put some fright and terror into their minds, and they carefully kept away from us after that.

Well, perhaps, gentlemen, I could tell you lots about the offensive, tell you how the Serbian government invited me to go with the Serbian army into Serbia on the 14th of September, when all nations were represented except America; there was no American there. The general staff invited me to go with the Serbian army during the offensive, and I accepted the invitation, and I unofficially represented the whole American government in my uniform there, although I had no permission to do so. Of course down there we never asked for permission until after we did a thing, which is probably the right thing to do under almost any conditions, if you do the right thing. And how we went in, and how the Bulgarians and Austrians were driven down, and how the battle went over and thousands and thousands were killed, and how they had no nurses down there and no doctors, and the wounded and dying were perishing for lack of attention—oh, those terrible days of the last three weeks of the offensive will ever remain impressed on my mind as the most terrible cruelty I ever saw in my life.

Any way, I am satisfied of one thing, that when in October the Serbs and Allies, 150 miles inside of Serbia, where they got driven to bay, just to see the Austrians and the Bulgarians go down to their knees and say, "It is enough, have mercy and spare us, we surrender," just to see that one thing, Bulgaria and Austria surrender and lay down their arms, which later caused Germany to surrender, just to have seen this one thing is certainly one of the proudest things that I have to remember, and that I will always remember with pleasure, the bringing down of the enemy and finishing of the war. You should have seen the cheering and joy, and the thousands of soldiers, after carrying on for

four years and then victory, victory, victory! Well, so great was the pleasure of those people that after all the terrors and horrors I had seen, I returned with the last impression pleasant—the impression of final victory won.

Now, in this victory Americans were present, because I was not the only one there. I was the only officer, but I might just as well let you know that with me in the Serbian army about 10,000 American boys. They were camouflaged in French and Serbian uniforms, but they were there, from Chicago, from Pittsburg, from Cleveland and from everywhere. You remember two years ago in the Auditorium here we had a great hullabaloo when the Serbian volunteers went over, when the Serbian Commission was here. Perhaps you read in the papers that from Gary ten brothers went over. They gave up their jobs in the works, where they were making ten or fifteen dollars a day, ten brothers, all the children of one mother. They went to Serbia to fight for the liberty of their nation, for the liberty of the world. They went there, and 10,000 others went with them, all American citizens who voted here in this country, who had property in this country, who had families in this country. I found them there, I spoke to them, I brought their messages to their folks in this country. I found them dying in the fields and they told me what to tell their wives and children when I got home. I made their wills on the battle fields. Of those ten brothers, I found two of them, one dying and one wounded. And so in Serbia we have made ourselves felt and we have reason to be proud. In France we have done well, and in Italy, and very well in the Balkans, and wherever there was work to be done or a battle going on, there was an American to be seen there.

Now, my time is up and the other speakers are here, and excuse, me because I was not prepared to talk to you at all. They just jerked me up from my seat and told me to fill in the time, and I filled it in. (Applause.)

THE PRESIDENT.—I am sure we are very glad to have heard Professor Jager. Now we will have an intermission of about ten minutes, during which time we will be glad to have your membership, the Secretary here will be ready to take your name and your money if you wish to pay your dues at the present time. Then we will have a brief session before noon. You are at liberty for a few minutes.

Recess.

THE PRESIDENT.—The meeting will please come to order. We have next on the program a paper by Mr. C. P. Dadant, but he is not here, so we will fill up the time with a substitute. We have with us Mr. Krouse, of Guelph, Ontario, Canada, President of the Ontario Bee-keepers' Association. We will be glad to hear from him for a few minutes. Mr. Krouse. (Applause.)

ADDRESS OF MR. KROUSE.

(Guelph, Canada.)

Mr. Chairman and fellow bee-keepers: I want to admit right on the start that I am not much of a speaker, it is out of my line, but I always feel at home when I get into a bee-keepers' meeting. I don't

know, there is something about bee-keepers that makes us feel that we are free to talk to each other and makes us feel at home.

When I came to Chicago I made up my mind that I would call and see how you did things over here at this meeting. I must admit that I am somewhat disappointed; I thought you would have several hundred people here at the meeting. Now at our meeting in Ontario which was a couple of weeks ago, we had an attendance of three hundred. I expected more than this here. I am a little bit disappointed in the size of your meeting. But while you lack in numbers, you make it up in quality, I expect.

It looks to me like all large bee-keepers are men that know their business. I have not been at it very long, I am just a beginner yet. We enjoyed this year in Canada a wonderful crop of honey. I don't know how it was here in America, but we had a wonderful crop of honey, and then the good prices made things pretty good. When I figured up my crop about half through the season, it made me feel pretty good. We got another rain just then and we had another crop after that. You know then what would happen, you fell a lot better, and when we took in our crop the average was something that I don't ever expect again in our locality. It was wonderful.

Now, listening to a few speakers around here, there were some places that were not so well favored, some places you had a good crop and other places you hadn't. I am just taking it from what I heard in this meeting, different ones speaking. We had a general crop pretty well all over our country, a good crop of honey.

Now, as I told you before, I am not a speaker. If you have any questions to ask me, I might be able to answer you some questions, but to get up and make a speech is out of my line entirely.

A MEMBER.—How much was your average in pounds of extracted honey?

MR. KROUSE.—I would not like to tell you, you might come over and live there, and be like Prof. Jager there about that country he spoke of. I think I will give up bee-keeping and go and buy some of those farms, where they have iron and coal. If they can pick up free gold on the street, that is ahead of bee-keeping. We had thirty-six ton from 300 colonies.

THE PRESIDENT.—Now we were to have a question box, and if some one will pass these papers around, I would be glad to entertain the questions, and answer them if we can for a few minutes. In the mean time, there is the appointment of committees. First, shall we have a Committee on Resolutions? I believe it is customary to have a Committee on Resolutions, and an Auditing Committee to look over the work of the Secretary-Treasurer. Has any one any motion in regard to committees? Shall we have a Committee on Resolutions?

Moved and seconded that a Committee on Resolutions be appointed. Carried.

THE PRESIDENT.—How shall this committee be appointed?

THE SECRETARY.—By the Chair.

THE PRESIDENT.—It has been suggested that the committee be appointed by the Chair. If there is no objection, I will proceed to

appoint a committee. We will save as much time as we can this morning. I appoint Mr. Stewart and Mr. Wheeler.

MR. WHEELER.—I prefer to be excused.

THE PRESIDENT.—This gentleman here, I can't think of your name, I know it well enough.

THE MEMBER.—I hope to be excused from any committee.

THE PRESIDENT.—Then it is up to you, Mr. Stewart.

MR. STEWART.—To do it all? I will do it.

THE PRESIDENT.—The next question is the Auditing Committee. Shall we have an Auditing Committee to go through the work of the Secretary-Treasurer, or shall we take it for granted that his work is all right? Any suggestion or motion?

A MEMBER.—I move we accept his report as read.

Motion seconded, and carried unanimously.

THE PRESIDENT.—Now the Committee on Prices, the standing committee that we have been accustomed to. I believe this committee has in the past two years done us considerable good. We have unified the prices. Formerly bee-keepers sold all the way from 7 to 8 cents a pound up to 30 cents a pound. There was too much difference in the prices of honey sold by the bee-keepers. This committee has informed the bee-keepers through this section of the country in regard to what the prices are to be, and I believe it has resulted in increased profits to the bee-keepers. Shall we continue this committee? Any suggestions or motion?

A MEMBER.—I move that the same committee act again.

Motion seconded, and carried unanimously.

THE PRESIDENT.—Now if you have your questions ready, we are ready for the question box. While these questions are being taken up, Mr. Bull will say a few words.

THE SECRETARY.—Mr. President, I notice quite a few faces here that I am not familiar with, we have several strangers with us. Now to keep up our mailing list as well as we can, we want every bee-keeper we can get hold of. We want your names and addresses. Those of you who received this letter mailed out on the 6th of February, I have your names and addresses, but those of you who did not, will you kindly leave us your name and address, so I can put you on the mailing list. No matter where you live, we want your name and address.

THE PRESIDENT.—The first question here is: "How are we going to join the State Bee-Keepers' Association?" I suppose that means, how is this Association going to join the State Bee-Keepers' Association. Probably Mr. Bull can answer that.

THE SECRETARY.—Why, it has been customary in past years that we join them in a body, there has been a motion put through that we join in a body. It costs us 50 cents to join the State Association in a body, and we get this cloth-bound report, we get not only the State meeting but our own meeting in here reported, this goes free to every member. The report alone is well worth the fifty cents. The larger the membership in any State, that only helps them out. When we help Illinois we help all states more or less.

A MEMBER.—Any reduced rates for joining the National?

THE SECRETARY.—I don't know anything about that. You can talk to the National Secretary, he is here. There are reduced rates for "Gleanings" and "American Bee Journal." It will cost you 75 cents for either. The regular rates are $1. If you join the Association, they will only cost you 75 cents.

A MEMBER.—Do you reduce it to 50 cents to those who are already members of the State?

THE SECRETARY.—I don't think that was allowed. It was taken up last year, and it was decided then that we should pay $1.50, because we have to send 50 cents for each of our members to the State.

A MEMBER.—While this matter is up, I make a motion that we join the State Bee-Keepers' Association in a body.

Motion seconded and carried.

A MEMBER.—Mr. President, I would like to ask if the dues we have already paid, $1.50, to the Northwestern, if the State is included in that?

THE SECRETARY.—Yes.

THE MEMBER.—Or if we have more dues.

THE SECRETARY.—That is all.

THE PRESIDENT.—That includes them.

The next question is: "What do you think of the metal honey combs?" Who will answer that question?

THE SECRETARY.—Is there any one here from the Root Company? Maybe they could tell us.

MISS IONA FOWLS.—We hardly feel like making a report. We tried to get them earlier in the season, but they came so late that when we tried them the bees were very reluctant to enter them, but they did deposit wax in them, but they did not build them out. If we had tried them earlier in the season it would have been a fairer test.

THE PRESIDENT.—I have not seen them myself or tried to use them.

A MEMBER.—I would like to ask a question on those combs, those metal combs. Are they fully drawn out, or only partially drawn out?

MISS FOWLS.—They are drawn out almost the whole length, but not entirely, because of course when uncapped you whould have to have a little space left for that, but they are drawn out quite a good deal.

A MEMBER.—Do I understand the bees line it with wax, use the comb just as it is to line it?

MISS FOWLS.—They line it with wax.

THE PRESIDENT.—I would imagine that being a metal it would conduct heat in such a way that they would not be desirable for wintering, the metal would conduct the heat away from the bee more readily than wax would. But I can't say from experience.

A MEMBER.—That is merely a theory, isn't it?

THE PRESIDENT.—Yes, theory pure and simple.

THE MEMBER.—And theory never proves a fact.

THE PRESIDENT.—Somestimes. The next question is: "When shall we take bees out of the cellar, on cloudy or clear days?" Will any one answer this question?

THE SECRETARY.—Mr. President, I like to take them out best in the evening. I open the cellar door just as soon as it gets dusk, so the light won't bother the bees, I leave the cellar open and give them lots of air and then in an hour or two let them out. In that way, with all the excitement they get they don't start flying, I set them outside and they will quiet down. Maybe they won't fly for two or three days, that don't matter. They won't mix up or drift. If you try to let them out on a bright, sunshiny day, just as soon as you open the door the cellar is full of bees, and they don't know where they are, and a few of them never find their hives again.

THE PRESIDENT.—Any other answer? It is not a good thing to let them out when the weather is very cold, so the bees will perish before they get back, or if the day is windy and cold, nor is it a good thing to let them out at a time when the weather is too warm, so that they will go out with a rush and get mixed up. I have let bees out on a day on which they ought not to have got out at all, and then there were two or three days before there happened to be a day on which they could fly, and then the wind got rather strong and the bees would drift around, that was after they had been set out two or three days, but usually it works out all right.

THE SECRETARY.—I believe the ideal time to let them out would be to study the weather reports and let them out in the evening, if the next day is supposed to be bright with little wind. If you get them out in that way you can get the best results.

A MEMBER.—Mr. President, I think we all have experience with some drifting, and not very long ago I read a statement of Mr. Doolittle, he says you can do away with drifting if you put the bees out on a bright day, if you smoke the hives a little. He says he has never any trouble with drifting. Has anybody tried this? I am somewhat dubious if that would work out so perfectly as he says it does, but we all know that Doolittle does not make any statement except where he knows what he is speaking of. He says you can put them out any time or under any conditions if you smoke them a little before putting them on the same stand again, and it don't matter whether they get on the same stand again or not. That is Doolittle's statement. Is there any one that can bear him out on that?

THE PRESIDENT.—I usually smoke the hive, and use the entrance block. After the block is in, I stop the entrance with a little cotton, and then along about four o'clock, perhaps, along towards the evening, the cotton can be pulled out, and they come out a little, the next morning more of them come out, and in that way they don't drift and don't get lost. "How and when to feed in the spring," is the next question.

A MEMBER.—Give them the honey in the fall.

THE PRESIDENT.—The way to feed in the spring is to give them the honey in the fall. I find for me the best way to feed is to keep a good supply of reserve combs. I give them all I think they need in the fall and then some, but I usually find they need some more in the spring. I keep over about one or two full combs, Root combs, filled with honey, for spring feeding, and then I take out an empty comb and slip in a full one wherever the colony seems to need it. It is the

easiest way to feed, and if you save your probably unsaleable honey, if you have any such, it can be utilized in this way.

A MEMBER.—Where do you keep those combs, in a warm place or in a cool place?

THE PRESIDENT.—Well, they would freeze in the winter. I have a honey house, the bees are in the cellar beneath and the combs are kept in the honey house above, and in the spring they can be used to put in the place of an empty comb.

The next question is: "How to keep bees from swarming." That is rather a broad subject to start at this time of day, I believe we had better omit that until later, and perhaps we will have time to discuss that this afternoon.

"Is it practicable to ship drones from the South early in the spring for queen mating here." Has any one a suggestion? I never tried it.

THE SECRETARY.—Mr. President, I should think we could raise drones here as quick as we could raise queens. You can't raise good queens early in the spring here. You can raise drones earlier than you can queens, as a rule.

A MEMBER.—I don't think you can get them to mate after you get the queens, get the drones, until the right season comes, is my experience.

THE PRESIDENT.—I think the drones would be ready as soon as the weather is suitable.

A MEMBER.—One of our queen-raisers over in Michigan makes a practice of shipping in a package of drones every Spring. I have not said much to him about it, but I know he makes it a practice. That makes me think that he may have been getting some desirable results from it.

A MEMBER.—Who is that?

THE MEMBER.—A queen breeder in Michigan, E. E. Mott of Michigan.

THE PRESIDENT.—Has any one else a question? Any further business before we adjourn? It is about five minutes to 12.

A MEMBER.—What is the time of meeting after dinner?

THE PRESIDENT.—One thirty. If there is nothing further, we will stand adjourned until 1:30. Be here promptly, please.

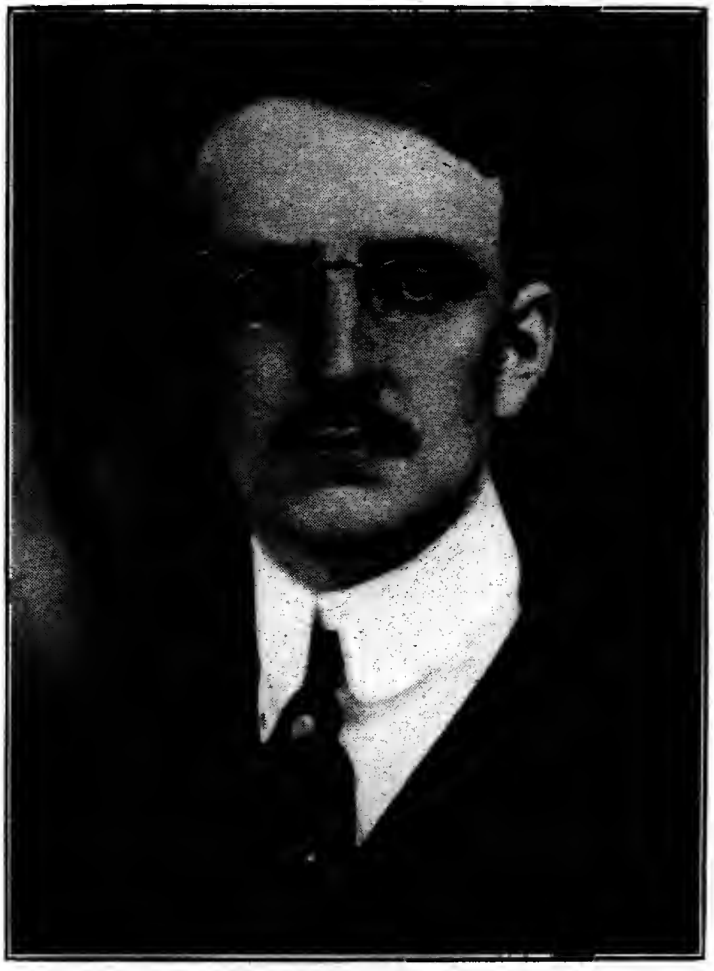
TUESDAY AFTERNOON SESSION.

THE PRESIDENT.—The meeting will please come to order. We have first on the program "The control of European Foul Brood," by Dr. E. F. Phillips, Bureau of Entomology, Washington, D. C. I think Dr. Phillips needs no introduction to this audience, or any of the other bee-keepers in the United States, for that matter. We will hear from Dr. Phillips. (Applause.)

THE CONTROL OF EUROPEAN FOUL BROOD.

(Dr. E. F. Phillips, Washington, D. C.)

Mr. Chairman, Ladies and Gentlemen: I want to confess, in the first place, that I haven't talked on the subject of "European Foul Brood Control" for a good many months, and perhaps not for several years. There was a time four or five years ago when there was scarcely a bee-keepers' convention which did not have a discussion on this very important subject, but we have gotten away from it to a certain extent. Not that the diease has been materially reduced in scope in this country,



DR. E. F. PHILLIPS.

but that the bee-keepers have better learned to get it under control, so that it has not been necessary for us to discuss it as frequently as we formerly did.

Now, the Bureau of Entomology has been interested in European foul brood for the last ten or twelve years. We thought we had been making some progress with it, but it was not until we began an entirely different investigation that we really found out some of the important things about European foul brood control. We discovered the main things in the control of European foul brood in discussing our present hobby, the subject of wintering, and it is that phase of it that I want to talk over this afternoon.

It perhaps will be well, however, for me briefly to review a few points, in order to connect it up with some of the conclusions that I want to draw later on.

First, as to the age of the larvae affected by this disease. As you know, it is a disease which affects the larvae and kills it when it is between three and four days from the hatching of the egg, very much younger than the other diseases. It first turns a light yellow color, gradually getting darker, or it may be a gray color, gradually getting darker, depending upon the particular bacteria which are present in the diseased mass. And that I think is a point which should be dealt with just a little bit.

You know that there is a tremendous variation in the appearance of larvae attacked by European foul brood. With American foul brood, why, if you see one lot of it, you know what it all looks like, because it is practically always the same, and when the larvae die they form a peculiar position in the cell and are practically all alike. With European foul brood, on the other hand, we find tremendous variability in the position of the larvae, and in their color and whether or not they have an odor, and whether or not they show any tendency to ropiness, and all those things. We have recently found out why there is this variation, and while it is not especially important to bee-keepers to know this in connection with the treatment, it does help to elucidate a good many points, if we know what brings this difference about.

As you probable all know, European foul brood is caused by a bacteria which we call bacillus pluton. It is the cause of the disease, and it is always present in the disease, and there can be no European foul brood without the presence of bacillus pluton. But there are also found in those larvae dying of European foul brood a number of other bacteria, not the cause of the disease, but they are a common occurance as accompanying the disease. One of the most common of these is the bacillus alvei. If that is present in larvae dying of European foul brood, as it very commonly is, the color, instead of being a brilliant yellow, usually is gray.

Now, the larvae dying when there is only bacillus pluton present, if you put a match or a toothpick into it and pull it out slowly, it practically does not rope at all, it breaks right off, unless it is very watery. While in the moist stage, it may run down over the cell, but if it is beginning to harden up it will break off. If bacillus alvei is present, we sometimes get a ropiness in European foul brood of an inch or an inch and a half, and rarely two inches. So that it is different in appearance and different in color. The difference in ropiness is due largely to the presence of an intervening bacterium, which does not cause the death of the larvae, does not cause anything in the disease, except what seem clearly symptoms.

Now, another point which has been a great deal confused in the minds of bee-keepers in this country, as to whether or not European foul brood has an odor. Some bee-keepers have maintained, and maintain very vigorously, that there is practically no odor in European foul brood. But when bacillus alvei or any of the three or four other bacteria which are sometimes present in this disease find their way into

this decaying larvae, then you may get an odor, and you may get different odors under different conditions.

The odor commonly attributed to European foul brood is that of a yeasty smell, that is, like a slight fermentation. That is found only when the common bacteria is bacillus alvei, the same organism that causes the ropiness that I spoke of just a few minutes ago. So that all of this variation is caused, not by the real cause of the disease, but by invading organisms.

The chief characteristic sympton which enables us to get at the proper treatment of the disease is that the diseased larvae at no stage of its decay adheres tightly to the cell. Now it is distinguished from American foul brood very markedly in that one respect. The American is tenacious to the cell. You can usually not move it at all without breaking the cell wall, and the European at no time adheres tightly in that way.

Now, there are several points on which treatment is based, points in the behavior of the disease, which are important in devising a treatment. First of all, European foul brood is a disease of weak colonies in the first part of the year. It ought not to be necessary to emphasize that point, and yet in all the discussions in the bee literature that point has not been adequately presented.

Let me put it in a different way. European foul brood has caused its greatest ravages in places where the honey flow is late in the summer. You take the damp, wet region of New York, for example, where the main honey flow comes in August, and you take your own Kankakee region south of here, where Mr. Miller operates, where one of the heavy flows, on the Spanish Needle, comes in the late summer, that is another place where European foul brood has been rather common. In California, where it has perhaps caused more trouble than any place else in the United States, the main honey flow does not come until July. Now, July in California is very late, because the season is open by the latter part of February or the first of March, so that it is a long time from the beginning of the season until the honey flow begins, the main honey flow. And all of the places where European foul brood has been a serious thing in the history of bee-keeping have been places where the honey flow did not come early in the summer.

It is perhaps better to explain more clearly why that is. In those parts of the United States, for instance, like the orange section of Southern California, where a heavy honey flow comes very early in the season, the bees get started and the colonies begin to fill so rapidly that they are able to get strong enough before the disease appears, so that the disease cannot cause them any serious trouble. In other words, wherever we find an early honey flow, we find European foul brood to be realtively mild, and wherever it is found it attacks weak colonies.

Now, there may be some difference of opinion among bee-keepers in that regard. First of all, the definition of the strength of the colony is faulty. When we say a full colony of bees, we don't all have the same picture in our minds as to what constitutes a full colony, and then on the other hand we find colonies of bees attacked with European foul brood that have eight or ten frames of brood, but such colonies of

bees, if they show the symptoms of the disease, rarely are suffering from it, and usually if they have a fair show they clean it up entirely without aid.

The second point is, the disease is prevalent in the spring and early summer. Now that is a thing which we have all known to be true for a long time, and we have had no adqeuate explanation of it, but it is probably due mainly to the fact that at that time of the year the colonies are not as strong as they are later on in the average apiary, although that cannot be held to be universally true, because we do sometimes get cases of European foul brood later, and we sometimes get, as I say, colonies of bees that are strong which show the symptoms of the disease. However, in an example of all the samples which have come to our bureau during the last twelve years we find that they are very predominant in June and drop off very rapidly after that.

The third point is that the disease disappears in the summer, unless the colony has become weak that they cannot throw it off. That is also borne out by the figures from the samples received at the bureau, and is borne out also clearly by the experience of the bee-keeper. The disappearance of the disease usually accompanies the beginning of the good honey flow. That is, whenever the time comes in the season of the year when the honey flow is heavy, that is the time for the disappearance of this disease.

In 1899 Mr. N. D. West, one of the apiary inspectors of New York, mentioned in an article in Gleanings—the first good article on this that has appeared in America—a fact which has been overlooked since. That is, he said that the earliest brood of the year usually escapes with a little loss. That fundamental thing in European foul brood treatment has been overlooked in our literature, and I hunted high and low through colonies I know of in New York and other places, and while a great many people have known that to be true, Mr. West pointed it out in 1899 and it has hardly appeared in the literature since.

We found out in connection with our European foul brood the fact that some bees can resist this disease better than others, and usually we see that the Italian bees can resist the disease better than any other, and of all of the races that we have, I suppose that we must give credit to this race for being the most resistant.

Now, of course we know that it is an infectious disease because it is always accompanied by bacillus pluton, as I mentioned a while ago. It has never been found without this organism, and can be produced artificially by treating this organism, so that it gives us a clear case of infectious cause.

Now, the disease differs from American foul brood very markedly in the character of the bacteria which are present in it. Our old friend American foul brood is caused by an organism which we call bacillus larvae. Now bacillus larvae, when it runs out of food, that is, when the larvae on which it is feeding are used up, forms a spore, extremely resistant to heat and chemical disinfectants of all kinds, with the result that we have there a form of life which is tremendously resistant and hard to kill. For example, you can take American foul brood and boil it for ten minutes at the temperature of boiling water, and it

will come out alive, or a large part of it will. You can put it in a corrosive sublimate solution and leave it a month and it will come out all right. You can put it in a carbolic acid solution and it does not feaze it at all.

With European foul brood, the disease which I am attempting to discuss this afternoon, we have a very different condition. It does not even take a boiling temperature to kill the bacteria. Any of the mildest disinfectants will get rid of it, and it will die of its own accord if left exposed to the air for a few weeks.

Now the difference in the behavior of thse two different bacteria is due to the fact that bacillus pluton does not form a spore, and consequently it is very much more easily killed. It must live through the winter and go from one colony to another in its active state. The fact is that this organism is so easily killed in various ways that it becomes a matter of wonder that the thing ever lives through a single winter, and yet it does, as we know. So that the characteristics of the bacteria are going to help us very materially in devising our treatment.

I mentioned a while ago that the diseased bacteria does not adhere tightly to the cell wall, which makes it possible for the bees to clean out European foul brood cells very easily, provided they are strong enough to clean house well, and provided, if I can use a rather human phrase, they haven't lost their spirit, they haven't lost their pep; so if they want to do a thorough job of cleaning up it is possible for them to get it out.

The greatest trouble in all of our work on European foul brood has been the fact that we have never been able to decide definitely how it is spread from colony to colony. Now with American foul brood we know very well how it is spread. We know it is by feeding and by robbing colonies that have the disease. With European foul broods, on the other hand, the fact is very different, for while we know that it can be produced by robbing or by feeding, because we can do it artificially, we do feel quite certain that that is not the ordinary method of spreading; and the evidence, largely due to the efforts of Dr. C. C. Miller of this State, is that nurse bees in passing from colony to colony constantly are probably the culprits in the transmission of the disease.

On account of the ease with which the bacteria causing this disease are killed, it has never been found necessary to disinfect the hives or the combs or the brood frames, or the honey which is found in colonies containing this disease. They can all be saved and used with impunity. And one point I want to mention is that while it spreads very rapidly as an epidemic in certain conditions, it is so easily combatted that very frequently does not even know that it is present.

Now there are some preventive measures which must be taken, which have been taken for years by bee-keepers having a full realization of the fact that they were combating the disease by preventive measures, and this is preeminently a disease which must be combated in that way—it is not satisfactory to wait until the disease appears and then proceed to clean it out, but the method of attack for European foul brood is preeminently to provide conditions so that the disease can never show its face in the apiary.

We have bee-keepers in this State and in all the adjoining states that have been going ahead, as you know, year after year, with European foul brood all around them and they never see a sign of it, or there may come conditions where the bees get a little bit run down and then a little of it will appear. Then they will become frightened, they thought they were safe, and they may do a lot of heedless and reckless and foolish things in eradication, whereas the trouble has been that they did not continue to do what they had been doing—use preventive measures. But in the remedical measures the only thing we do in European foul brood is to tide the colony over until operative methods can be begun.

Now, the two points that are necessary are, first of all, resistant stock; and second, strength of colony. And those are the points that I want to mention. It is not necessary for me to dwell at any lenght at all on the use of resistant stock. That point has been so thoroughly covered in our bee literature that all bee-keepers understand that pretty well.

There is a good deal of difference in the different strains of Italian bees in regard to their resistance. We find in going over the country that one particular strain of Italian bees is universally condemned for lack of resistance by bee-keepers who have tried it in European foul brood control, but that happens to be a strain which has not been sold very lately, so you don't need to worry about it, but please don't ask me whose it is. On the other hand, almost all of the strains of Italian bees now sold in the United States commonly are resistant. We can with a good deal of assurance recommend those breeders of Italian bees who are now advertising prominently in our bee-keeping literature, and we can buy their bees with the assurance that if the other provisions are made the disease will rarely gain a foothold.

Now, we have had this question asked us hundreds of times a year: "Whose stock shall I get for the resistance of European foul brood, and what is the best thing for me to do?" Well, that probably will be asked this afternoon, so I might as well answer it now. I am going, in all truthfulness and to the best of my ability, to recommend what I would do if I had European foul brood in my yard, and that is, to buy untested Italian queens from several reputable breeders who have been in the business for some little time.

Now that does not sound just right for the fellow who is just beginning. There are queen breeders who start out every year in this country, having advertised their stock in the bee journals, and probably a good many of them are selling good stock, but they haven't proven their case yet, and the thing for us to do if we are fighting the European foul brood is to buy from those men who have been in the business long enough to show that their stock is really good, and I think that that is all the criterion that we need to use; men that are established in business.

Now then, buy several untested queens from several breeders, because you might happen to find a fellow whose stock is not so good. And perhaps I had better explain about that untested queen part of it. I have shipped a great many queens, but nothing like as many as the queen breeders, of course, and I have always found what I know that

bee-keepers usually find to be true, that the breeding queens do not ship well, even when you send an old queen by express with a nucleus, if that is permitted in your State, there is more danger that the old queens will not get through in good shape. Furthermore, a queen that is good enough to be a breeder is necessarily at least a year old, and usually older than that, so that she is going to be of no value to you before very long. We have tried queens from a few breeders and we have found this, that if we get a half a dozen queens, untested queens, and take good care of them and watch them carefully, that we can usually pick out of that six at least one that is as good as any queen you can buy in the market. So that is the policy that we have been pursuing, and it is the policy that we recommend to bee-keepers generally.

So that instead of buying a queen from somebody who says that his stock is the most resistant in the world, buy several, three or four untested queens from two or three or four reputable breeders of Italians, and you are pretty sure to get something that is better than you can buy as a breeding queen for this work.

Now, from the very beginning of the discussion of European foul brood control, it has been pointed out that strong colonies resist it better than weak ones. And we have known that to be true; there is nothing new about that. And yet it was not until we began working on wintering and found out what a real strong colony of bees is in the spring that we found out the methods to recommend for the entire elimination of European foul brood so that we will never see it. If you will pardon a reference to a specific case, it happens to be an apiary that my father owns. I went to his yard a few years ago, I had a half a day to spend at home, and asked him how the bees were getting along. Well, he said, they hadn't done anything, they were in bad shape apparently, hadn't had any swarms or any indication of swarming, and things looked very blue. I went out and found, after looking at seventeen, that fifteen of the seventeen were simply rotten with European foul brood, and the other two were queenless, so we can call it 100 per cent. I explained to him, the fact is I made up for him a method of treatment, and I will explain that a little later, and we sent off to a breeder and got several untested queens, and they were introduced. Then the rest of the afternoon, after I had written a letter ordering the queens and explained a few things to him—I didn't have much time, I had to leave in just a few hours—I showed him how to take care of one colony, and then we let it go at that. But after that I sat down and went over with him in careful detail the methods of making a winter packing case, and I said: "The thing to do for European foul brood is to simply get ready this winter packing case and then get your bees into it, get these queens that I have recommended," that I happened to buy from a man that I knew I could get queens from right away, not better than anybody else's—"and get ready to use this winter packing case this winter." And the result is that never a cell of European foul brood has appeared in that yard since.

That is the point I want to make, and it is about wintering that I got on the program this afternoon. You know we have come to the place in our work in the Bureau of Entomology where, if we are going

to talk to bee-keepers on our favorite hobby, we have to call it by some other name or be barred from the program. So that the thing I really want to talk about this afternoon is the subject of wintering bees.

Now, I told you a while ago that we have overlooked one point in European foul brood control, and that is that the first bees of the year usually escape with a little loss. Consequently, the method of attack for European foul brood must be to make the first brood just as big as we can possibly make it, in order that the nucleus may get so strong early, quickly, that European foul brood can never show its face, and that is what the winter packing case has been doing for us.

Now, it is very hard to talk definitely on the subject of bees without bragging a little, because in order to give anything definite in regard to what a certain apparatus will do or what a certain system will do, the bee-keeper says: "Well, you will have to show me," and in showing it is necessary to draw on the experience which one has most intimately before him. Consequently with your permission I would like to tell you something about the Bureau of Entomology at Washington, or near Washington.

On April 23, 1917, we had a number of distinguished men visit us at the apiary, Professor Jager was one of them, and he recalled at noon the fact that on April 23, 1917, two swarms of bees came out of the yard. Now they were not hunger swarms, they were not handsful of bees, they were big, full-grown swarms that came out of the apiary, and it was not yet unpacked. When these swarms came out it was a beautiful warm day. These colonies were all packed up in winter cases, so we hastily unpacked them and gave them remedial measures for any further swarming, and we did not have any further swarming that year. We found large quantities of brood in the hives, but that was in April, 1917, and war had only been declared a little while, and we did not have the opportunity to make the examination of the yard which we would like to have made. But in 1918 we did have that opportunity.

In discussing what happened in 1918 it would be necessary for me to go back just a little bit. The season of 1917 was a very poor one in the vicinity of Washington, in that we had almost no honey, but we had a large quantity of honey dew, which as every bee-keeper knows is an abominable thing to winter bees on. But there was a sugar shortage in the country, and we had large quantities of honey dew, so that we thought we would not draw on the sugar supply, we would not use any honey or any sugar, but we would attempt to winter the bees on the stores that we had on hand.

You remember that last winter was one of the worst ones we ever had—I guess the worst. The result was, we had a long period of confinement, with an enormous death rate of adult bees, and an actual loss in the apiary of three colonies. Three colonies had been re-queened in the first part of August, and had for some reason rejected those queens. A second queen was introduced to each colony—we re-queened every year. A second queen was introduced to each of these three colonies, and they were also refused, and a third queen was given to each colony, and those were accepted in all three cases. But as you will recognize, that left a rather long period of queenlessness at a very critical time

in the history of those colonies, at the time they were getting ready the bees that would live over winter. And these three colonies, while they went into winter with enough bees, did not have enough young bees. Those three colonies died out completely.

Now, among those that still lived, all the rest in the apiary, we found an enormous death rate of adult bees. For the benefit of some who have not seen the winter packing case with heavy packing in operating, let me say that the bees do not accumulate on the bottom board when they die, but the bees push them out day after day as they die. The dead are pushed out. And that is the best way to tell whether your bees winter well or not. If you have enough packing on, they will push out all their dead, and if you haven't enough on, they will leave some on the bottom board. They push these out day by day. We would have a little layer of snow, so the snow would fall in the colonies. The next morning we would go to the apiary and we would find three or four or five dead bees on the snow. But they accumulate in front of every one of these quite a little mound of bees during the winter. That is, of course they dry down and decay, but there was quite a little pile of dead bees in front of every colony. The result was that when the bees were examined on the 7th of April for the first time, we found an unusually small number of bees per colony.

Now, we winter our bees in two hive bodies, two ten-frame hive bodies, heavily packed, and we found on the 7th of April—it was a beautiful warm day—that we had brood in seven to eleven frames, in seven of the colonies which I opened. Now, we opened two packing cases, that was eight colonies, and one of the eight happened to be one that I just mentioned that died, so that we thoroughly examined seven collnies and then repacked them.

They had brood in from seven to eleven frames, but of course those frames were not full of brood. The center ones were well filled and then they tapered off to each side, and you will see, with brood in eleven frames, some of them had gotten into the second story; that is, they were brodded in two stories. They were repacked and closed up for a longer period, and then we remebered that on the 23rd of April in 1917 two swarms had come out, so on the 20th of April we went out and took a look at the second stories of all the colonies in the apiary. That is, we just scraped off the sawdust, took the inner covers off, which are left there all the time, and examined the frames in the upper stories only.

Now, as you recognize, we have a divisible brood chamber, and the tendency is for the queen cells to be started at the bottom of the upper comb, and we examined all the compartmnets for queen cells in over half the colonies in the apiary. Those queen cells were cut out and a third story was given in the packing case. It is built high enough for a third story, we have to raise the cover up an inch and a half, but it has a six-inch telescope, which makes up for that. And all these colonies having queen cells on the 20th of April we gave a third hive body and lifted the brood from the second into the third and of course a part of the first, we did not examine them, and put them out in the center and put sawdust on the outside, but not on top of the third

body because we did not have room, and left them there until the 7th or 8th of May.

Now, I unfortunately was out of the city when the bees were unpakced. Perhaps some of you won't think that is any misfortune, because it is some little job, but I missed the opportunity to see what was going on. But Mr. Sturtevant of the office made a very careful examination of every colony of bees at the time of unpacking on the 7th or 8th of May. They started in on the 7th, and it got cloudy and chilly in the afternoon, so the matter was deferred until the next morning, when it came out nice and bright and warm. An examination showed that the average amount of brood for the entire apiary was enough brood to fill twelve Langstroth frames. Now that means enough brood to fill twelve frames. But there were three or four colonies in the apiary that had enough brood to fill fifteen Langstroth frames.

Now, our honey flow began the 19th of May, and we had reached the peak. In all the history of American Bee-keeping there has never been a record of an apiary, so far as I have been able to find, that had a larger amount of brood than we had there. The disappointing thing is that we showed from our own records that it is possible to get fifteen frames full of brood, and that our average was only twelve. So that we are looking for a method of wintering which will give us that fifteen, because it can be done. And so we don't claim that we have reached perfection by a long way, because we are still shy three frames of brood, and we are looking for a man who will come along with a method which will give us all that can be obtained, and until we get it all we are not going to get all the honey we are entiled to.

Now, let me go ahead a little with our experience. The honey flow in the vicinity of Washington has always been supposed to be from clover. Now, we are on the Serpentine barrens. Everybody who has lived in the east knows there is some horrible soil there, which does not favor plant growth, and it is as sour as vinegar. Clover grows a little, but does not do well, and we have always looked on the vicinity of Washington as virtually, from the honey standpoint, a desert, and I have repeatedly said personally and before groups of bee-keepers that we have the poorest honey location in the United States in the vicinity of Washington, I have said it and believed it, becuase we were depending on clover to give us our surplus, and then after clover, which generally ends between the 4th and 10th of July, there is not anything until the fall flow comes, and I have only seen one good fall flow in Washington in thirteen years.

But when we began to pack these bees and get them strong early, we discovered a honey flow from two sources, both of them very heavy. Poplar and Locust will give an average flow in the vicinity of Washington of 100 pounds to the colony. I had never seen anybody get it, but since we began getting our bees strong early in the year we are getting that honey flow. Now, it is not a very high grade of honey, because Poplar honey, as some of you know, is an inferior honey, rather strong in flavor and dark amber in color, but it is honey, and better than none at all. So that now we can count on getting our main crop well under way before the 15th of May. It usually starts in about the 7th, 8th or 9th of May.

Now, going back to European foul brood for just a moment, the answer it seems to me is rather simple. We got this colony strength, of which you will pardon me for bragging so much, by leaving three things with the bees the fall before. We gave them room for the development of colony strength without unpacking; we gave them protection in superabundance, and we left an abundance of storage. We left probably with every colony of bees sixty pounds of honey. Now that seems outlandish, but it is what did the trick. Storage, protection and room were the three things the bees wanted to build up a better colony, and if any one of those three things is lacking, the colony cannot build up to its full capacity.

A MEMBER.—If they did not have the stores, didn't have the protection or did not have the bees, wouldn't they develop European foul brood?

DR. PHILLIPS.—Any one of those things would give the disease an opportunity to develop. But with all three present, and with the resistant stock in the hives, European foul brood has not a show in the world. And consequently, that is the point that I want to make this afternoon, that we have it within our power to give the preventive measures for European foul brood control in September for the next year, and unless we do give it in September the chances are we won't give it in time.

Now, there is another point, which I have not made yet, in regard to the matter of wintering. Colonies of bees that are not wintering well begin to breed too soon. Let me tell another story, from experience, unfortunately, although I don't know but what it was a pretty good experiment. We moved our apiary in Washington on the first day of February this year, our lease expired on the place we had and we got an opportunity to get a place very suitable for our work, and so we had to move the first of February. Now, that is an awful thing for a bee-keeper to contemplate, but it was a good experience, that I would not have missed for a great deal. When we got to the new place we unpacked them from their packing cases, because these packing cases we found were so heavy that the stores and the sawdust and the heavy cheap quality of wood we used for making them, that six men could not lift one of them, so we had to unpack them. Of course, as you recognize, there is not anything very good to get a hold of, we could not handle it, almost broke one fellow's leg trying it, and I said the best thing to do was to unpack them, when we got to the new location we set them up and repacked half of them and left the other half unpacked. We examined those bees Saturday, last Saturday, or Friday, now I have forgotten exactly which, but it was just before I left, and we found that brood had started in three of the weak colonies out of fifteen that we examined, brood had started. Those that were in the packing cases have no brood at all, and they won't for some time, because those colonies that are strong in bees, that are well protected and have lots of stores, will probably defer brooding until the first of April. When the first of April comes they will start in response to the stimulus of the incomeing of nectar or pollen, whereas colonies of bees that are unprotected in various ways will probably start brooding right away. You will find that some exposed colonies

will be struggling along raising brood at a high expense, whereas they should be resting quietly without doing so much work and without generating all that heat.

Now you might think that if bees have been neglected and have begun to rear a brood, that you will have a new lot of bees to take their place, and while it is an expense, you will still have a colony. But we have found from an examination of dozens and dozens of colonies that those colonies of bees that die in the winter are the colonies of bees that almost invariably had brood in them before they died, and there is no more expensive thing that a colony of bees does than to rear a brood out of season.

But here is the important thing: When they do start they start with a bang, if I may so express it. Our bees, as I told you last year, had brood from the 7th to the 11th of April, I don't think any brood had emerged in those colonies up to that time, but they started off with a big lot of brood. The result was that the colony was suddenly greatly increased in strength, able to take care of enough brood to fill twelve Langstroth frames one month later. So that this characteristic of European foul brood in not attacking the very first brood of the year gives us our clue to the use of the methods of getting our colonies of bees strong in time for the very earliest flow that comes along.

A MEMBER.—Wouldn't you have them breed in September?

DR. PHILLIPS.—Yes, but that is getting ready for the winter. But after the winter period comes on, then I want it to delay as long as possible, keep them from breeding as long as possible, say until the latter part of March or the first of April.

A MEMBER.—Don't you consider that more important than anything else?

DR. PHILLIPS.—September breeding?

THE MEMBER.—Yes.

DR. PHILLIPS.—It is important to get young bees to start the winter.

Now, there are three remedies commonly used for European foul brood, and I want to mention these three in order to show that they are exactly alike. You will remember that a few years ago Mr. A. W. Alexander, one of the best bee-keepers that we have had for a long time, described a method of eradicating what he called black brood, because we had not got to calling it European foul brood then, and his method was to remove the queen and keep the colony entirely queenless for a period of twenty-seven days before a new queen was to begin laying, and she was to be a young, vigorous Italian queen, and according to the recommendations which Mr. Alexander gave, the result would be an entire elimination of European foul brood. A great many people tried it, and it did not eliminate it. There was more criticism, I think, of the Alexander method of treatment than anything that has appeared in the bee literature for many, many years. The thing that stood out in the mind of all of us that read those articles, or that article particularly, was this, the period of queenlessness. We overlooked the fact that Mr. Alexander said in that article that there was not any use of trying to treat a weak colony by this method; you must get the colony strong. We overlooked that. He said it. We overlooked the

fact that it must be strong, vigorous Italian stock, although most people tried that, used that stock in giving the treatment, but the result was, criticisms poured in from all over the country. Apiary inspectors wrote in to Washington couldn't we do something to prevent people from publishing that kind of stuff, and I felt a little that way myself. The only trouble was that we didn't read the entire article. We may have read the words, but we did not let them sink home, because the method now used almost universally is the method modified that Mr. Alexander then described.

Now, Mr. Alexander is located in the buckwheat region of New York, with a honey flow beginning about the first of August. The result is that his colonies of bees—his cellar is not very good, or was not, he is unfortunately dead now—and his bees came through the winter very weak every spring, and he used a hive about three-quarters as long as the Langstroth frame, just a little bit of a thing, that is the reason he could keep 350 in one place, if any one should ask, but the result was very weak colonies in the Spring. With no honey flow at that time, the fact that he got rid of it at all meant a very radical treatment.

Now, our very dear friend, Dr. C. C. Miller, fortunately got European foul brood. I think he would agree with me in the use of that word "fortunately," for his experience has been very beneficial to the bee-keepers of the United States. In attempting at the suggestion of Editor Root, who is trying to defend himself for publishing this article, in attempting to follow out the Alexander treatment, he followed directions on several colonies, and then he made a mistake, and instead of keeping his colony queenless for twenty-seven days he kept it queenless for ten days. Then he introduced the queen, and to his consternation later on he found he had made a mistake, and yet he looked and saw that there was not any disease there, so since that time he has been experimenting, and he has settled down to the belief that ten days is enough. Well, the only difference between the recommendation that Dr. Miller has been giving and the recommendation I want to urge this afternoon is that ten days is ten days too long, and if the remedial measures which Dr. Miller has been practicing in his apiary for years are followed out, it is a rare thing for European foul brood even to appear.

Now, I want to tell you something about Dr. Miller. For several years before he discovered that he had European foul brood, Dr. Miller was finding diseased larvae in his bees; he would find a cell or two dead. Well, it did not seem to spread, there was not enough to worry about; it soon disappeared, so he did not worry about it. But one year, I have forgotten the year, conditions were favorable, that is, they were unfavorable for bees and consequently favorable for European foul brood, and he got a little smattering of it at the yard, so he sent a sample to Washington, and he started to work on his remedial measures. The only change that he has adopted in his apiary since is the introduction of pure Italians instead of the hybrids which he had before.

Now, the method which we are using—bee-keepers largely throughout the country are using—is to introduce an Italian queen after a

period of queenlessness. The length of the period of queenlessness is inversely in proportion to the strength of the colony. If they are as strong as some that Dr. Miller had when he had that bad year, ten days is right, and if they are as weak as Mr. Alexander commonly had, twenty-seven days is necessary. So if you keep your colony of bees queenless until the diseased larvae have disappeared, that is quite enough. If it takes a longer time for the colony of bees to get rid of the diseased larvae, they are not as strong as they ought to be. So that we have a measuring stick that every bee-keeper can apply to his own yard. If you don't have to keep your colonies queenless at all, you have 100 per cent of the proper strength.

Now, the second method of treatment which I want to call to your attention is this, I have seen it used a number of times with very excellent results. Let us suppose, for instance, that we have fifteen diseased colonies in the apiary. It does not make any difference how many. Suppose we have fifteen. Let us examine those fifteen, and in connection with their inspection grade them according to strength. And here, we will say, are ten strong ones and five of the weaker ones that we get. Now let us shake these ten stronger diseased colonies on to drawn combs, it does not matter where those drawn combs come from, they can be dry if there is a honey flow coming on. If there is not any honey flow immediately, give them some honey, and I don't care where that comes from, but shake them to drawn combs. Untested Italian queens take the medium of shaking, and you know that is a good time to introduce a queen, to run them right in with the shaken bees, that takes them away from all the brood, the diseased material, which is then piled on the five weaker ones. You see that each colony of the five will get two broods on top of it.

Now these ten colonies that have been shaken to drawn combs, perhaps with a little honey, and with a young Italian queen. The queen gets busy right away. Those colonies have a chance to build up, and if it is a little while before the honey flows, they have a fair show of building up to a respectable strength, not to full strength probably, unless the honey flow is very light.

Now, the five that have been stengthened by the addition of two broods shaken to each colony, will suddenly be increased greatly in strength, and after a little while you will find that say three out of the five have become stronger than the ten that you shook before. Then shake those and introduce an Italian queen to the three, and if you care to, you can introduce Italian queens to all of them at the first operation, if that seems preferable, then you have two with a lot of brood on which is piled up. Some of the combs will be entirely out of brood, and you can take those away if you wish. It is very seldom that you have to shake more than four-fifths of the colonies in an operation of that kind.

Now the third method, which is commonly used in California and in other places where European foul brood is present, is to lift the brood to the second story, put an excluder between the first and second story, and put the queen below, with full drawn combs. That separates the queen and the brood. The queen cannot continue to lay in the cell where the bees are, and the disease is usually eliminated.

Now that can be used with safety provided that a young Italian queen is introduced at the time of the operation.

Now, in order that this may stick in our minds a little better, I want to make a comparison. In the control of swarming we do one of three things. We either take away the brood from the colony, or we take away the queen from the colony for a little while, or we separate the queen and the brood within the hive. Now in the control of European foul brood we do one of three things. We either take away the queen from the colony, or we take away the brood from the colony and shake it, or we separate the colony and the brood within the hive. In other words, the things which are successful in swarm control are the identical things which are successful as remedial measures for European foul brood. Now why, I don't know. There is a certain parallel between remedies for swarming and remedies for European foul brood. It helps us to remember it, at any rate. There must be some underlying thing that brings about this parallel, and it is enough to justify the bee-keeper in believing that swarming is a disease. But I will not speculate on that, except to point out the exact parallel between the remedies used for the disease and the remedies used for swarm control.

Now, I will be very glad to answer any questions on European foul brood, but I want to make just this one point; the things which we know of European foul brood we have known so long and so intimately that they have ceased to a large degree to stand out prominently as the characteristics of the disease, and I have found this true in talking of European foul brood the last few months, that bee-keepers have said, "Why, sure, I knew that; I knew that just as well as you did," and then when I told them: "Well, I didn't know it very long ago," then he comes around and says, "Well, I didn't either."

So that we have come, I think, in the eradication of European foul brood, to the point where we can say that the thing which is needed for the control of this disease, which has caused enormous losses in this country, is good bee-keeping, and when we get A. No. 1 good bee-keeping, with good stock, we will stop worrying about this infectious disease.

Now, I want to emphasize this word "infectious." It is an infectious disease; there is every evidence from a bacteriological standpoint and from what we know of bee-keeping to know that it is infectious, and the history of bee disease in this country has shown that European foul brood has caused enormous losses here. But it is simply because we have departed from the paths of righteousness in regard to the keeping of bees. I can go back further than that to show that in the history of American bee-keeping there was for a number of years a tendency towards getting our colonies weaker and weaker and weaker, according to the hives we used and the methods of practice we used that were advocated and preached by bee-keepers in this country. We are fortunately getting away from the bad practice which was preached to us by our best bee-keepers in the country, and as we do get away from them and get back to the kind of bee-keeping that Moses Quimby taught we will forget that there is any such a thing as European foul brood. (Applause.)

THE PRESIDENT.—I have a number of programs of the National Bee-Keepers' Association, which has its first session this evening in this room. All of the members of the Chicago Northwestern Bee-Keepers' Association will be invited to attend, I preseume, by the officers. We will have ten minutes intermission. In the mean time, we should be very glad to have your names here for the Secretary if you wish to join the Chicago Northwestern Association.

Recess.

THE PRESIDENT.—I am sure we all appreciated Dr. Phillip's talk. He is out just at present, but he is coming back after a while, and I know that if any members here would like to ask him questions, if you will just get your questions ready, when he comes in, after Miss Fowls' paper or talk, we will have him answer those questions. I think this is a very important topic, the European foul brood. We also have a question here regarding American foul brood, perhaps he will answer that. I am sure he can do it better than a good many of the rest of us can.

The next on the program is Miss Iona Fowls. The subject is "The Disappearing Disease." Miss Fowls. (Applause.)

THE DISAPPEARING DISEASE.

(*Miss Iona Fowls, Medina, Ohio.*)

Mr. President, Ladies and Gentlemen: I think that if the bee-keepers in the past had taken the trouble to post themselves concerning foul brood before it actually appeared in their own apiaries, there would not be to-day nearly as much foul brood in the United States as there is. And this same indifference that has been shown toward foul brood, waiting until it struck an apiary before anything has been attempted, before people have attempted to learn anything about it, this same characteristic is even more striking in connection with the disappearing disease. Even last year there was one of the best bee-keepers in New York State, I think, that lost practically all his bees by foul brood, and now he has learned enough about it so that he has built up a new apiary, and probably will be prepared next time.

In the case of the disappearing disease every one has taken that same attitude. They pay no attention to it until it begins to strike them in the pocket book, and then they take notice. And I shall have to admit that the same thing was true when it struck our yards. I don't mean the Root yards, I mean the Fowls yards at Oberlin.

When we first noticed that we had it, that night I sat up until the wee sma' hours reading all I could possibly find about Isle of Wight and paralysis and disappearing disease, mysterious disease, anything that I thought might possibly have a bearing on the subject, and the most that I found out was that nobody knew much of anything about those diseases. I knew that there had been numerous instances of cases of supposed poisoning in which the owner was certain that there was no poison present. And then I saw various allusions to strange, peculiar maladies without any attempted name. And then later on they began to call it the disappearing disease, and although it had taken toll of

hundreds of colonies, bee-keepers gave it scant attention, and seemed to think that it was probably caused by bad weather, and that on the appearance of warm, sunshiny days that the trouble would, according to its name, disappear.

But such was not the case, and the disease continued to cause a great deal of havoc in different apiaries, and took a large toll, not only of the bees, but also cut down the honey crops materially, and I haven't any doubt that there are people right here in this room that have had their honey crops cut down and had no idea of the real cause back of it, for oftentimes you would never recognize it as a disease at all, that is, the first symptoms, and yet it is taking away a great many bees, enough to weaken the colonies so that they are not good honey producers. And I speak from others' experience as well as my own when I say that I think that the disease is serious enough to challenge our attention. I think that we ought to post ourselves concerning its symptoms, and be ready at its first approach to recognize it and learn all we possibly can concerning it, for it is a disease that varies in different localities and under different conditions. It resembles the Isle of Wight, and may possibly be identical with it, but we certainly need more data before we can be positive about the disease.

The symptoms of the disease are quite varied. Sometimes it starts gradually, one hardly notices it, but other times it starts suddenly. The first the bee-keeper notices is a great number of dead bees out in front of the hives. And some of the bees sometimes appear very sluggish, torpid, and other times real lively, in fact just frantic, running about this way and that way, climbing up on top of blades of grass and just as they are at the top falling helplessly. If they are examined it will be noted oftentimes that their legs seem to be—at least part of them will seem to be paralyzed, and sort of drag along as they walk. Other times you won't notice that. Sometimes the wings seem abnormal, and the bees, when them attempt to fly have the appearance of loafing, just a few inches at a time. Other times they will actually take flight and perhaps fly two or three feet, and then fall quite suddenly, and I suppose great numbers of them doubtless are strong enough at the start to fly away from the yard and then never return, because the number of bees that are dead in front of the hives would not account for all of them.

Sometimes black, shiny bees, looking something like robbers, may be noted, and doubtless that shiny appearance is caused by the bees rubbing their bodies, because when they become really frantic they act as though they were in pain and take their legs and rub their bodies very vigorously, and also their heads.

Sometimes I have noticed in front of a hive over a dozen bees that were diseased being pulled out at the entrance by the other well bees. They would tug and pull at them, sometimes two or three at one bee, and as soon as they got them out of the entrance they paid no further attention to them. But these bees that are affected will group together in little bunches and apparently seem to want the society of the others probably for warmth.

If you will watch them sometimes you will see most unusal antics. Often times they will rise up high on their legs, and taking their front

legs, they will pull their tongues away out to an amazing length, and do this several times, until they become quite exhausted, and then they will let their heads fall forward and roll to one side and rest on their mandibles and remain quite quiet.

The disease is apt to appear during a wet time, but not always. Also, during the progress of the disease, along about an hour or two before noon, the disease is at its worst. If you went to the apiary then you would be pretty apt to notice it, unless it was a light form, but you might visit that same apiary late in the afternoon and never suspect that anything was wrong, and yet you would have lost a good many bees during that one day.

When the disease struck our yards, it went through every colony, and we have six apiaries, and there was not one where the disease did not show, and it was in practically every colony. In fact, I could not say that there was one colony that did not have it. I immediately wondered whether it was some poison, because I could not think that a disease would start up like that in all the apiaries all at once, it seemed as though there was some other reason for it, so we went to all the colonies, everywhere around for a radius of about twenty miles, and looked at all the large apiaries, and often times if we happened to see a small one we stopped to look at two or three colonies sometimes, but we investigated everywhere we could and found it everywhere, all around us. And in only two cases did the owner suspect that anything was wrong, and one of these owners had already reported the case to Dr. Phillips, and the other one had said that he noticed that there was a carpet of bees the first thing in the morning—not the first thing in the morning—along when the sun became real warm.

It is not always true, but it is often true that after the disease has appeared in the yard it will appear again the following season. Now, for how long that will be true I don't know. The abdomens of the bees are sometimes swollen, but not always; also there is occasionally a trembling motion noticed, the body shows a trembling motion. I speak of those two characteristics, because often times in what is said about the disappearing disease they say those two are not present. I have seen them both.

In the Isle of Wight they tell us the queen is not affected. Well, I have seen hundreds of colonies that had this disease, and of course I did not take the trouble to find the queen. but if I happened to see her I found her all right except in one case. In one case we found a queen that was rubbing her head most vigorously, she looked a little bit queer, and yet you could not see anything was wrong with her. We watched her anyhow. She kept it up, she ran this way on the comb and then the other and continued to rub her head, and I decided in that case the queen was affected. She was acting as the rest of her bees were. But I think that is unusual.

The causes of the disease are not definitely known, and some think that the disease is caused by nozema aphis, but if nozema aphis was never present in well bees and it was always present in those affected with disappearing disease, then we would be more inclined to think that. Some think that the trouble is caused by poisoning, but in cases of poisoning warm weather does not stop the trouble. And

more than that, examinations have often been made and a chemical analysis does not reveal the presence of any poison.

R. F. Waterman of Canada says he thinks the trouble is caused by insufficient air currents through the apiary, but we have known the disease to occur in apiaries on high wind-swept knolls.

E. J. Ladd, of Portland, Oregon, thinks that the trouble is caused by wet nectar, too much moisture in it, so that when it is stored in the cells it remains. Now that is not true all the time. It is true sometimes, but we have known many cases where it is not true.

Now, C. D. Hulse—I have forgotten his initials, I am not sure that that is right—said in 1917 that he thought the trouble was malnutrition; that is, a diet too rich in proteins, too much pollen, and about a year ago C. E. Carr wrote a long article on the subject, and he agreed with Mr. Hulse that malnutrition was at the bottom of it, was at least a factor in the trouble. I would like to say right there that if that were the case, if that were the only factor that was causing the trouble, then the disease would not be new to so many of our good bee-keepers, because those conditions would have existed for years past.

The one thing that stands out more prominently than anything else is the fact that the disease is worse in wet weather and generally disappears at the advent of warm weather. But even that is not always true, and C. P. Chadwick of California tells us that in 1917 the disease was in California, very bad cases of the disease throughout the apiaries in one large area, and he said that the disease persisted throughout the summer, in spite of the fact that there was no rain, but nice, sunshiny weather. And there have been several others that have given the same report, but not a great number.

A MEMBER.—In what part of California was that?

MISS FOWLS.—Near Redlands. Although we don't know the real reason for the trouble, it seems plausible to believe that it is probably caused by a combination of factors, probably damp weather with malnutrition, and perhaps the presence of one or more organisms. Nozema aphis is often times present, and doubtless other bacteria.

Now, of course that is nothing but a guess, but it is based on experience and on microscopic examination, so it is probably just as good as any other guess at present. And as soon as any one has a better one we should be very glad to have it. Over in Europe many people consider it the same as the Isle of Wight disease, and in our own country we do too. Possibly not the same disease, but at least some bacteria are the same in both; it gives these same characteristics. Over there they are using ever so many different chemicals, but quite without success, and just recently their government has appointed a committee, a commission, on purpose to investigate this Isle of Wight disease.

In our own country we have also tried the different chemicals. We have tried to use them in various kinds of syrups, or different medicated syrups. We have used lime and salt and sulphur, sometimes just feeding a heavy syrup, and also moving the colonies to an entirely different location, or moving them just a few feet. Some have advocated that. Some have taken away all the brood from the honey, others have made the colonies queenless. Some have dug a ditch in

front of the hive and raked up the dead bees every night and burned them, and some have taken off the bottom of the hives and let the bees drop, and given them more ventilation too. There have been ever so many different suggestions, and among the people who have tried these different things there is always somebody bobs up and says: "Yes, that is the very thing to cure the disease," they have tried it and they know it will cure it.

I seriously doubt whether any of those cures will really cure the disease. When we had the disease we tried several times to get remedies, and it was very noticeable that all the colonies got well just about the same time, quite regardless of which treatment we used or whether we used any at all. And a short time ago I read in an old bee journal where somebody was telling what should be done, but it was a rather impossible cure, I think for black brood, and Dr. Miller replied. He said: "I will tell you just what to do for that disease; you just paint your honey house. That is what I did, and my bees got well.

A MEMBER.—What did you do?

MISS FOWLS.—Well, I will tell you what we did do. We tried several different things, and they all got well anyway. (Laughter.)

A MEMBER.—How long, by the way, did this continue, from start to finish?

MISS FOWLS.—Sometimes it only continues just a few days and then it disappears. Other times it will continue for several months, and there are instances where it has continued the whole season. And David Running in Oregon told me a short time ago that he had it even in his bee cellar, after the bees had been put in his cellar. So that was another condition that varies.

A MEMBER.—What time of the season do you first see it?

MISS FOWLS.—I think it is usually about the opening of the honey flow, but that also varies. But Mr. Beyer says that he had it three times in one season, it disappeared and came back.

A MEMBER.—I was just going to say that in our country we find it at all times, all times of the season.

MISS FOWLS.—Yes, I think that is true. Different ones have reported that too. There have been different names that have been given to the disease, and some say that it is not the disappearing disease at all, that it is paralysis, but I don't think we need to quarrel about that. Whatever it is, it is very noticeable with all these different diseases, Isle of Wight, paralysis and disappearing disease, that in all the very bad cases they have the same things that we have been mentioning as distinguishing characteristics; we find them all present in this same disease under different conditions. Whether it is similar to the case of European foul brood that Dr. Phillips was just speaking of, that some one bacteria bobs up that gives us this special combination of symptoms, whether that is true or not I can't say. But all of the symptoms that have been given for Isle of Wight and bee paralysis and disappearing disease are all present in this one disease, unless we say the disjointed wings that they mention in bee paralysis. I don't know what they mean by those disjointed wings. But we do know that those wings are abnormal. And so whether the exciting organism is the same or not I can't say, but the distinguishing symptoms are.

And just to give a little idea of the seriousness of the disease, I would like to read you just two pages of past history, and I will leave you to judge for yourselves as to how much bearing it may have on the subject. (Miss Fowls then read letter from J. L. Beyer in regard to losses from the disease.)

And a man from Niagara Falls, I have forgotten his name, but a letter came from him stating that all of his bees, the whole apiary, had been wiped out.

A MEMBER.—Mr. Bowen.

MISS FOWLS.—These are just a few instances to show how serious the disease really is. And during the last two years we have continually had letters coming in at the office describing the symptoms and asking what they can do. In fact, we have had so many such letters that we have been compelled to get out a form letter in order to answer them all, and in the form letter we attempt to tell not what we do know, but to tell what we don't know.

There is still a great deal that we can learn about foul brood, and yet we know enough about foul brood now so that if an apiary is affected with either type of the disease we can clean up that apiary and get rid of it. In the case of the disappearing disease it is quite different, we don't know its origin nor its cause nor its cure, and therefore we are quite helpless before it, and just as long as we keep on this attitude of indifference, just so long our honey crops are going to continue to be cut down, and as soon as we wake up to the real menace and the real danger of the disease and try to find out all we can about it, post ourselves beforehand and then try to discover all we can concerning it, then I have faith to believe that we are going to get rid of the disease.

T. W. Riggs, of Nevada said something recently about foul brood that would apply quite well here. He said just as soon as we become really afraid of the disease it will be eliminated. (Applause.)

THE PRESIDENT.—Now if any one has any questions to ask Miss Fowls, I am sure she will be glad to answer them.

MR. KRAUSE.—I would just like to ask her, in your cases did you find out that perhaps two or three hundred miles from the yard where you noticed it first that they had the same thing almost at the same time?

MISS FOWLS.—At the same time we were having this trouble we found they did not have it down at Medina at that time.

MR. KRAUSE.—In Ontario we just found it the other way, that no matter who we would communicate with, at ten o'clock on a certain day we would find the bees affected. Then it disappeared just the same way when it was cured, at a certain time it disappears and we did not see any.

MISS FOWLS.—Excuse me, I would just like to add one thing to that. In one of the apiaries that had the disease quite badly the owner had been getting in different choice queens from all over, just to try them out and see what he considered the best, and every one of those colonies had it, quite regardless of where the queens came from.

MR. WHEELER.—Mr. Chairman, I have had quite a little experience along that line, and it is a question that I think we ought to look

into very carefully. I think that in the spring of the year we are apt to have a disease that resembles it, and I have made up my mind that it comes from poisoning, and I found the only remedy was to move the swarm to another apiary, move them entirely away, a few miles away, and the trouble would disappear at once. And there is another point in regard to the cause. In one apiary I have, that is enclosed with a high fence and trees over it, very shady, the bees would take that disease almost entirely some years, and they are brought in maybe from five or six apiaries. I make up the one apiary in the fall from five or six, and in that one apiary they will all show it, they will drawl out from the damp, dark places into the sunlight, swarm out of there, while in the other apiaries they will not show any signs of it, the apiaries that they came from. Now that is either due to the food, or else it is due to the damp condition that the hives are in. It is a question worth thinking about, because I find that that is almost sure to be the case. It is only once in a great while that I have any of that trouble, maybe once in five or six years. But the bees will go toward the sun, out from under the trees, and swarm out on the gravel in front of the hives, and those seem to come from all the apiaries, from all the swarms, and those hives have been picked out from five or six apiaries out in the country. Now, whether they get the honey from some source that causes a sourness in the hive, or whether it is the shade, something of the kind is the cause of it, I made up my mind to that. I may be mistaken, but it is worth considering.

MR. BLAKER.—Mr. President, we have got to speak of principles in a condition of this kind, and in order to get at that, we have got to find out whether—if it is the source from which the bees get the nectar, than all the bees in the apiary would be affected. But I know it is not true that that is the case, because in Minnesota we can have one or two colonies that have this condition and the rest be perfectly free from it, shows in my estimation that it is a bacterial disease, and that if there is no transmission from one to the other it only affects those that are originally affected. Now what it comes from in the first place O don't know, but fundamentally I think we should look to this as a bacterial condition or disease, and not poison from the nectar that we get.

There was one particular case in Minnesota that I know of, that the University found there, where a colony was affected, and it was removed. The hive faced east when it was with the rest of the bees, and it was set over in front of a building facing south, where it got the sunshine all day long, and yet that colony had this condition continually all summer long, while fifty colonies setting on the old stands were not affected at all.

A MEMBER.—What time of the year did you first notice it?

MR. BLAKER.—It was not my affair and I could not give you the exact figures, perhaps Professor Jager could tell you more about it than I could, but I doubt if he could, because Mr. Frantz was looking after that. But I myself know from having seen it there that it was early in the season and it lasted all summer long, but the dates I can't tell you.

A MEMBER.—From our friend's talk I gather that he thinks all of the hundred colonies get their honey from the same source, the hundred

colonies in the neighborhood. Now I believe that it is perfectly possible and very probable that one colony in an apiary may get honey from a source that the other colonies have not found, and perhaps half of them are getting from that source and the other colonies not found it. I don't think that they all get their honey from the same source.

THE PRESIDENT.—I think the gentleman is right in that respect, they do not always gather honey from the same source.

MR. KRAUSE.—I don't like to contradict this man, but I think he is talking of a different disease altogether; I think that is paralysis that he is talking about. The crawling disease don't act like that at all. You don't have it all summer, you only have it a short time, and when one colony has got it the whole yard has got it. I do admit that a yard that is shady, you will notice it there more than you will one that is in the sun, but the ones in the sun will have it too. But you will never find a yard that has what we call the crawling disease with just one single colony that has got it. I would say that that was paralysis, and it only lasts for a short time, and it disappears just as quick as it comes.

MRS. ALLEN.—Mr. Chairman, we had a disease that I suppose would be catalogued as the crawling disease, because we had all of the symptoms that have usually gone with it, particularly the bees crawling up and dropping down and the inability to fly, just this little hopping, and yet we had only two or three of the colonies in the yard that were affected that way.

A MEMBER.—How long did it last?

MRS. ALLEN.—We had it two or three different years. It lasted only a while in the spring, but we had it again in the summer. It again lasted just a short time. But we never had the whole yard affected, just two or three colonies.

MR. KRAUSE.—I might say that all we do in the case, like this gentleman spoke of here, is to change the queen and the disease will disappear.

MR. BALDWIN.—I think that Miss Fowls deserves a great deal of credit for opening up this question to our minds, that she has made us think. Now I know my mind has been very hazy as to whether the paralysis and the disappearing disease were one and the same. And yet I don't think Miss Fowls has made it clear to some of our minds as to what she thinks about this. Now some have raised the question this afternoon, and I wish we might get an opinion, if nothing more, as to whether the average bee-keeper thinks they are identical.

MISS FOWLS.—Whether or not they are the same disease I cannot say, because the same thing that Dr. Phillips said about foul brood will easily hold good here. It might be that certain bacteria are present in the different diseases that would give these characteristics that we think are distinguishing characteristics, that might be it, and so until we know that, I can hardly see how I can answer the question. But I have seen an apiary affected with what the owner told me was paralysis, and another man stood right there and said "Yes, it is paralysis," and it was identically the same thing that we had had and we had called it the disappearing disease, and that is the one that I described to you.

A MEMBER.—What do you think?

MISS FOWLS.—Well, it seems it is the same thing, and I don't care what we call it.

THE MEMBER.—What do you think it is?

MISS FOWLS.—I think that there is some bacteria in both that give the same characteristics, and whether there are certain bacteria in one that are not in the others I can't say, I am not at all sure about it. It looks very much as though they are the same, but I don't know.

THE PRESIDENT.—I would like to know what Mr. Kendal thinks about it.

MR. KRAUSE.—Mr. President, if you will allow me to speak again, the only way we can tell the difference between the two is by opening the hive and examining the comb. Now in paralysis you will find the bee shaking on the comb the same as you will on the outside. Now we can't find that in the crawling disease.

MISS FOWLS.—I mean to say that we had seen a few trembling bees, but the great majority were not trembling.

MR. KRAUSE.—On the comb inside?

MISS FOWLS.—Yes, and the same with the distended abdomens, a few of them, not many, not any such a large number as I understand they have had in cases of paralysis in the South. There I understand that the majority are in that condition. They were not in all that I saw; it was only a few.

A MEMBER.—Mr. Chairman, I don't believe there is any law of nature which would prevent a colony of bees from having both diseases at one time, paralysis and crawling disease.

THE PRESIDENT.—As Miss Fowls says, bacteria which do not characterize either one disease particularly may be present in both.

A MEMBER.—Several speakers have spoken as though they thought that because of certain symptoms being alike that the two diseases were one, or as though a colony could not have both diseases at the same time. Now if we have symptoms of the crawling disease in bees on the comb that we do not have in paralysis, or vice versa, then there are two diseases. But if we find all of the symptoms all of the time in all of the hives, then we have only one disease.

THE PRESIDENT.—Mr. Kildow has had a good deal of experience with bee diseases, we would be glad to have him give us his opinion in regard to the disappearing disease or whatever you may call it.

MR. KILDOW.—I never saw it.

THE PRESIDENT.—I may say in my own yards we have had something similar to that occasionally. Sometimes there will be one or two colonies affected, again quite a number.

A MEMBER.—What time of the year?

THE PRESIDENT.—It is usually along in the summer time, in warm weather.

THE MEMBER.—Not in the spring?

THE PRESIDENT.—No, not in the spring. Sometimes I have cured it by changing queens, as has been suggested here. Last summer I had something slightly different from anything I had ever observed before. The bees were very strong, there was a very strong honey flow, and we observed a great number of bees in front of one

of the hives. At first glance these bees seemed to be young bees, my impression was they had swarmed and the young bees had dropped in the grass. But in passing through the yard a few hours later, I found practically the whole yard, about a hundred colonies, had these apparently young bees in front of them, and there were thousands of them crawling through the grass, and they could be found crawling through the grass twenty or thirty or forty rods away from the yard. Now this continued for several days and they entirely disappeared. Whether that was the disappearing disease or not I don't know. I never saw anything like it before. Perhaps some of you can enlighten me on that.

A MEMBER.—Was that before clover flow or later?

THE PRESIDENT.—It was during clover flow, along the latter part of June. We had a very heavy flow on at that time, and it was not likely the bees would get anything but clover. There were some orchards there, but there was no clover with those orchards, the orchards were cultivated, so it does not seem possibly that it could be poison; and since these bees were apparently young bees it rather puzzled me.

A MEMBER.—Did it follow some very hot weather?

THE PRESIDENT.—The weather was comparatively warm, and it was in the swarming time, a number of colonies were swarming about that time, trying to swarm at least; more than usual at that time of year.

A MEMBER.—Can you tell us how to prevent it?

THE PRESIDENT.—No, that is why I asked you, what I would like to find out.

MR. WHEELER.—At one time I made up my mind that it was caused by the pollen the bees got. They were acting in that way in the honey flow in the latter part of August, and I made up my mind that it came from the pollen that had reached them, made them anxious to get out and run, and I noticed some healthy bees would take a hold of them and see if they could get over them, trim them up as if they were something fine.

THE PRESIDENT.—Any further discussion on this topic? We have a paper by Mr. Hassinger. Mr. Hassinger is not present. I have asked Mr. Kindig to read the paper and he has kindly consented to do so.

Mr. Hassinger's paper was then read by Mr. Kindig, as follows:

BUILDING AN EFFECTIVE WINDBREAK WITH CORN STALKS AND WOVEN WIRE FENCING.

(Edward Hassinger, Jr., Hortonville, Wis.)

During the past year the value of a windbreak has been so strongly presented both by bee-keepers and our government experts, that I have been convinced of the necessity for one as a protection for any bee-yard. I had been thinking about windbreaks for five years or more and had planned one such as I would build if I ever had occasion to use one. The idea was to build an ordinary woven wire fence and thread corn stalks or sugar cane stalks through the wires. Close enough together to break the wind without diverting it onto parts of the yard as a solid fence will do. Part or all of the stalks could be easily removed during hot weather, if desired, and later replaced.

I have built such a fence about my apiary for protection this winter as shown by the photographs. It may be considered experimental and too young to crow about. However, the fence is cheap and no one can lose much if it proves to be a failure. It is cheaper than a board fence and it seems as though it must answer the purpose much better. It should also be more effective than an evergreen windbreak. It is there or not there, as you wish and it is not taking the fertility from the soil which may be of greater use in growing food products. It is a long wait, also for the twenty odd years growth required by the evergreens. The stalk windbreak requires but little space and is not bad looking as the photographs show. If it is to be more permanent, grape vines, ivy, or morning glories may be planted and allowed to run up the fence, to add to its beauty.

Photos tell the story better than words. Figures 1, 2, and 3 show the fence twelve feet high on the north and west sides of the bee-yard. Figure 4 shows a fence six feet high on the south and east sides of the yard. Figure four also shows how the stalks look from the outside of the fence as compared with figure three which shows the inside of the fence. The stalks were threaded into the wire from the outside between two wires near the top, one in the center, and two near the bottom as a close view of figure three will show. The twelve-foot fence consists of a double width of six-foot wire and two lengths of corn stalks.

Perhaps most any kind of woven netting would answer the purpose but Figure 5 shows a close view of the kind I used. Notice the twist the nature of which is such that there is plenty of slack to press the wires and make room to pass the stalks between. The wire was listed as poultry and rabbit netting by a mail order house. Six foot high, heavy grade, comes in ten rod bale at 66 cents per rod. The space between the wires is one and one-eighth inches at the bottom and four and one-fourth inches at the top. With this wire the stalks are easy to thread. The wire plus the labor and stalks and second hand telephone poles at 70 cents each made me a cheap windbreak.

THE PRESIDENT.—Any discussion on this paper? Now while we have Mr. Kindig with us, we would be very glad to have him give us a description of northern Michigan. I understand he has been invetigating that as a bee location, and I believe that would be interesting to us. Mr. Kindig will favor us with a short talk. (Applause.)

ADDRESS BY MR. KINDIG.

I had occasion last summer, as the result of a lot of correspondence that I had had the year before, to go into northern Michigan, the upper peninsular, as it is known. I had received some letters from there that sounded to me as though it must be a wonderful location. For instance, one man from the eastern part of the peninsular had written me that he had received an average of 284 sections per colony for his twelve colonies of bees.

Well, now, I could not stand anything like that without investigating it, and so I went up there. And to give you briefly what I

found, I will speak first of the resources of the peninsular from the standpoint of nectar.

The spring flow starts off at willow, maples, elm in abundance, dandelion, wild cherry, and occasionally fruit bloom; in the older settlements there is fruit bloom, because that is not such a wild place as we might think it would be. But then those, of course, are auxiliary honey flows that simply help to bring the colony up into first class shape for the main honey flow, which begins along in the latter part of June, the 25th of June, about, which is red raspberry.

Now, that northern country is the natural home of at least three of our most important northern honey plants—red raspberry, alsike clover, and epilobium, or fire weed.

The red raspberry grown on all of the heavier ground. Those of you who have not been up there doubtless know that northern Michigan, back in the beginning of things, at some time or other, was passed over by one of the great glaciers, and it is cut into strips of clay and strips of sand, alternating over the whole upper peninsular. There will be a strip of the finest ground you ever saw, excellent clay and some other alluvial soil, and then there will come a sand barrens, as we might call it, a place that is absolutely no use on earth, unless it is good for making glass, I don't know, but it is of no value to a bee-keeper whatever. Now, between those sand plains there lies a soil of excellend nature. I must say that with the exception of the rocky parts of the upper peninsular, there seems to be good soil everywhere excepting in the sand plains.

Now, this raspberry is naturally all through this country, the same as it is in the lower peninsular, say north of a line drawn from Grand Rapids east and west. All the land north of that is a natural raspberry country, and being a new country, the raspberry is there in abundance. Wherever the timber has been cut off or partly cut off, so that the sunshine comes in somewhat, there the wild raspberry grows in wonderful profusion. In those sections, of course, where it has been plowed up once, the wild raspberry is gone, but in its place comes alsike clover in such abundance as I never saw before. I had heard of it, I received letters telling me about alsike clover, and one of my old professors at the agricultural college, Professor Jaffrey, some of you people are acquainted with him, told me stories of alsike clover growing almost to his hips.

Now, you know I wanted to believe Professor Jeffrey, I thought he was a good man, but when he told me such tales as that is raised doubts in my mind and I had to go there and see it, and I did. It is there. It was there last summer. And, as I say, it grows in such profusion as I have never seen before. And it is a weed, it grows wild through the woods, through the thinly timbered lands, under the raspberry bushes frequently.

The upper peninsular is a wonderful hay country. Chippewa County and Mackinac County are two counties of the upper peninsular where alsike hay is one of the chief products, and bee-keepers who are in those localities are getting a good flow from it. Now, I need note distinguish any between the different parts of the upper peninsular in regard to the sources of nectar. There is the epilobium, the fire weed.

This of course is a plant which we cannot always depend on, because it follows the fire regions. Where fire has gone through a slashing and burned out all the brush and undergrowth and everything, fire-weed will follow, and it will come up in wonderful profusion. I think I have a picture in my grip upstairs, and if any of you people want to see the picture of it I will show it to you, I will try to put it in my pocket tonight, showing fire-weed. You can see the bloom for miles across the country, that peculiar lavender hue of the fire-weed blossoms.

Now, that follows the fire, and in a couple of years the raspberry commences to come in, and the clover commences to come in, and the fire-weed commences to go, and in the course of four or five years or so, depending on circumstances somewhat, how badly it gets crowded, the fire-weed is gone again. And then another fire comes along. But when it is gone, the raspberry and the clover are there. And then another fire comes along and the raspberry and clover are gone, and then the fire-weed is there.

Fire-weed produces one of our very finest honeys. It is not necessary for me to say that. Bee-keepers know that fire-weed honey is one of the finest wild white honeys that is produced in the north.

There is a little basswood in places. The basswood has been much sawed off, everything of any size has been cut to a large extent. Later we get the goldenrod. Now, the goldenrod grows on the heavy land and somewhat on the edges of the sand plains, and if the temperature conditions are right, goldenrod secretes nectar and is gathered and stored, producing an excellent grade of honey. Where I used to live, over in Indiana, I did not think very much of goldenrod, but after I came to Michigan I commenced to appreciate goldenrod a little more. I notice that Dr. Phillips says that it does not amount to much for wintering in his textbook on bee-keeping, but I must say that in Michigan no serious results seem to have followed goldenrod.

However, the upper peninsular is cursed with one thing in the way of flowers, and that is aster, in some parts of it. Now I don't mean every part, but some parts of the upper peninsular, especially down along the Wisconsin and Michigan line. Through there the aster is quite a serious thing, and in the fall of the year they fill their hives full of it, and of course some of it granulates and some of it sours, and it makes itself a general nuisance. Those of you who are here from Kentucky and Tennessee, of course, look on aster with favor, and I don't blame you. I bought lots of honey from Kentucky and Tennessee and I appreciated it when it arrived from there. But when it comes from the upper peninsular of Michigan, I have nothing to say for it, and it is a problem. What the bee-keeper up there has to face is the getting rid of that aster honey, and then the substituting in its place for winter storage of a good white honey, of the clover, the alsike, the raspberry or the fire-weed, or the feeding of sugar for winter stores.

MR. WHEELER.—It is not good for wintering, then?

MR. KINDIG.—No, sir. It is a serious thing, an exceedingly serious thing, to have in the hive for winter on the upper peninsular; bad enough here.

Now, I might say in regard to wintering just a word, if you will allow me, Mr. Chairman. My time has already gone. Wintering up

there is not the serious problem that we might consider it to be. In fact, most of the bees on the upper peninsular—and I am not saying there is not very many up there—are wintered out doors in snow-walled hives without further protection. That is the ordinary means of wintering. Now, the conditions are these: Early in the fall—I haven't had a report on it this winter yet—but ordinarily early in the fall the snows come, and they don't melt; usually when it starts snowing it stays. It starts snowing about the time the ground begins to freeze, and the result is that there is built up a gradual blanket of snow until it may be six or eight feet deep, and the hives are down under that snow. Now the ground soon thaws after the snow falls, the ground that is frozen thaws out, and you see you have naturally an excellent winter repository for the bees, and under those conditions the bees winter very satisfactorily. But of course that beautiful dream must be shattered by the fact that every once in a while they have a winter up there when they don't have the snow, and then it is woe to the colonies that are outside in single-walled hives, they are just simply wiped off the map, that is all there is to it, just simply blotted out, because it is not unusual for the mercury to fall to 35 or 40 degrees below zero. In fact, Humboldt, a small town on the Duluth, South Shore and Atlantic Railroad in Marquette County, is frequently pointed to as the coldest spot in the eastern United States, and whenever there comes a real cold snap I usually look on the weather report to see how it stood at Humboldt, and that is on the upper peninsular.

Thus far I only know of two cellars on the upper peninsular for wintering. Cellar wintering in my estimation on the upper peninsular involves the same identical principle as cellar wintering in southern Illinois, as far as that is concerned. That is, a good cellar in one place I think is a good cellar in the other. They can be wintered successfully in a cellar. I was in a couple of apiaries where tenement packing cases are used, both the two colony packing case and the four colony packing case, and they were giving satsifaction. In some ways I feel that I would want to winter bees in the tenement packing cases on the upper peninsular rather than any other way, but of course that is a matter of choice.

I do want to say this to-day in closing. In my estimation clover land, as the upper peninsular is known, is to-day the greatest untouched resource of honey in America that I know of. I don't know how great that one is in southern California that they have been investigating in the United States Forest Preserve, but there are thousands of locations in upper Michigan untouched. I went through counties where I could hardly find a colony of bees, and I do not see why bee-keeping would not be a success there, when in other counties, under what seemed to me identical conditions, bee-keeping was being carried on with success. And across the Soo, over on the Canadian side, I found that there were successful bee-keepers over there, and I know that over in Canada, even on the north side of Lake Superior, that bee-keeping is being carried on with more or less success.

The greatest drawback to the upper peninsular that I know of, and in some ways it has its advantages, is that great cold body of water, Lake Superior. And still, at Marquette, there on the south shore of

Lake Superior, it is 120 days from frost to frost, more I dare say than it is here in the city of Chicago, and so it compensates in a way. But the cold winds of the early spring and summer and the damp cold fogs coming off of Lake Superior, drifting back overland, make me feel that one should locate some little distance from the lake. I believe I will not take any more of your time, Mr. Chairman. (Applause.)

A MEMBER.—Where was the man that got 250 pounds of honey per colony of bees?

MR. KINDIG.—I did not get to see that man. I say he wrote me that. I did not see it myself. I do know this, though, now I will tell you one thing that I do know, that a certain gentleman with 117 nuclei, they ran all the way from nuclei to what we would call small colonies, I will tell you how they were wintered. Last winter they were wintered out in single wall hives, without any protection and on the 17th or 18th of June I inspected the whole bunch. Then he shipped them to the upper peninsular and I would not have given very much for them for the location where they were any way, because the honey flow was already on, and he took those to the upper peninsular, divided them and increased to 204, I believe it was, and built them up for winter, and took off 11,000 pounds of honey. So that tells something. Now here is the beauty of the thing—I haven't told half of the story.

THE PRESIDENT.—Go ahead, tell the rest.

MR. KINDIG.—Because I am afraid these people are not particularly interested in the upper peninsular, because I am tooting my own horn, I come from Michigan and I think Michigan—I used to think Indiana is the best state in the Union, but I have changed my mind entirely, Indiana is not one-two-three with Michigan, although Indiana probably stands next. But Michigan has not only the honey resources, but every other sort of good thing too. And the upper peninsular has so many things to say in favor of it.

Now, over at a certain town—I am going to refuse to give names and places of bee-keepers who are living on the upper peninsular, because they were scared to death when I came up there, they had a good thing and they said, "Now, for goodness' sake don't tell anybody, because they will come right in here and they will crowd me and bring in foul brood." Well, they could see blood right away as soon as they found out who I was and what I was looking for. So I said, "All right, I will not say anthing, you need not worry, this is between you and I," but I did not tell them that I would not mention the upper peninsular. I say there is not much difference, if you get on the clay land, I would not care so much whether you go to Menominee County or over in Chippewa County on the east side, wherever it is most convenient I would say. Go up there and look around and settle down there. You won't miss it.

A MEMBER.—How many miles from lake?

MR. KINDIG.—From Lake Superior?

THE MEMBER.—Yes.

MR. KINDIG.—Well, I would want to be at least ten miles. I have a very close friend who will take three hundred colonies within two miles of Lake Superior next spring, and I tried last August when I returned to pursuade him that he was making a mistake, because

those fogs and cold winds flow back about ten miles from the lake and they interfere tremendously with the—no, not with the secretion of the nectar, particularly, but with the work of the bees. It keeps them in on days when a few miles further back they are working probably; under those foggy conditions or when there are those cold winds from the lake they are in the hive. There is a bee-keeper up there who came from Chicago a few years ago, a Norwegian, whose wife had learned something about bee-keeping in the old country, and they went up there and they built up in a few years to 150 colonies, and he said: "Ever since we have left what we call small bee-keeping we have average 100 pounds per colony." Now I think he included in that probably some of the aster honey, though I don't know. This person happens to live right in the center of the worst aster-infected area of upper Michigan.

You don't have to go up against this aster proposition every spring, because it is limited as to the area in which it grows, although where it does grow it grows with a vengeance; there is lots and lots of it.

Now they have a system of road-building up there by which the Cleveland Iron Company and a few more of those big companies that own a good share of the upper peninsula pay the bill and the common people enjoy the roads, and they are getting a series of roads over the upper peninsula that are great. I certainly was surprised, I thought I was going back in the wilderness when I went to the upper peninsula, but I certainly had the scales removed from my eyes on that. There are good roads. They don't need to float something that will bring in as many thousand dollars as they need to put the roads through, because it is the big corporations that run the iron and copper and timber business of the upper peninsula, there are whole counties that are practically owned by these corporations, and they are paying the bills and the people are getting the roads, excellent roads.

A MEMBER.—Are there any smelters there?

MR. KINDIG.—There are smelters there, but fortunately there is no bee-keeping territory within range of the smelters. Marquette County contains a large part of the smelters, and it is very rocky, and no one is going to locate in that sort of a place to keep bees.

A MEMBER.—Mr. President, I would like to ask Mr. Kindig what time the fire-wood and raspberry springs up after a fire. For instance, if there is a fire runs through there this summer, when could you expect a bee-keeping pasture?

MR. KINDIG.—The fire-weed will be there next summer. The raspberry only comes on after some little time. Bee-keepers are at a loss to explain these things. Here will be a territory without a sign of a fire-weed anywhere, virtually none. It is burned off this fall, and next spring it comes up all over with fire-weed. The explanation given is that the fire-weed seed has such a hard shell that the fire going there cracks the shell and it germinates the next spring. (Laughter.) I don't know what it is. That is what they say.

A MEMBER.—That produces the first year, unlike the raspberry?

MR. KINDIG.—Yes. It is an herb, willow herb is another name for it.

A MEMBER.—Is it a biennial?

MR. KINDIG.—It is an annual.

A MEMBER.—How long does the honey flow last with the fireweed?

MR. KINDIG.—It is scattered. Now, the honey flow up there is different from our honey flow here, for this reason. Nearly all the flowers that secrete nectar and grow in the shade, won't begin secreting nectar for ten days or two weeks after those that grow in the sun will begin secreting nectar. About six weeks is the honey flow, beginning the 25th of June, and beginning with the raspberry and finishing with the alsike clover. Now here is a condition—I am free to confess that I am afraid some of you will say I am the biggest liar on earth, but all I say is, come up there and see for yourselves, and then come back and tell me what you saw, face to face. The alsike clover grows in immense tracts, as I said before, for hay pasture. Now every fellow wants to produce all the hay he can, and the result is he may have several hundred acres of alsike clover hay. Now the labor question is a question up there just as much as it is here, and he starts in to cut alsike clover hay. He starts on the first of July to cut, maybe, and he will be cutting alsike hay for six weeks, and before he gets done with the last cutting, where he cut in the first place has come up to second growth, alsike again in bloom. So that serves to lengthen out the honey flow.

A MEMBER.—Does the second growth produce honey?

MR. KINDIG.—I am told that it does. I did not actually see the bees working on the second growth myself. I am told that it does, though.

MR. WHEELER.—Does it ever fail to produce honey? It does here.

MR. KINDIG.—It fails here. But the peculiar thing that I experienced up there was that they don't know what a drouth is. Now that is easily explained. You understand the proximity of Lake Huron and Lake Superior brings about a condition whereby rain falls with surprising regularity throughout the summer, and they do not really experience a drouth, and it is a drouth that cuts clover off. And for that reason I think it is the greatest bee-keeing country I ever saw. But I want to say to you folks this: any one who will go up there on what I have said and ship a carload of bees up there without making an investigation of that thing is doing one of the most foolhardy things that I can think about. There is only one way to go to a place like that, and that is to make due preparation in the way of investigation, and so forth. Go there next summer and maybe it won't look half so good to you. The only thing to do is to go and see it and satisfy yourself in your own mind without taking anybody's word for it, and then if you go there you will go there with your eyes open. I don't want to be to blame for any one going to the upper peninsula and being stung. I do want to create an enthusiasn in some bee-keepers to go there, because, as I said, I think it is a great thing to get away from the drouth that cuts the honey crop two years out of five around here. And you get away from a lot of things. But I want you to go there with your eyes open. So I say go there for yourselves, and go there during the honey flow.

A MEMBER.—July?

MR. KINDIG.—July, yes, just about as near the first of July as possible.

THE PRESIDENT.—I am sure we have enjoyed Mr. Kindig's talk, at least I have, very much. If there are no further questions, we will hear from Mr. MacNeill.

MR. LATHROP.—Mr. Chairman, just a word. I feel as though I ought to corroborate what Mr. Kendig said, because I was in that country, and I did not go there for bee-keeping either, although I have been a bee-keeper for thirty-five years. I went up to fifteen miles north of Iron Mountain, Michigan, to fish for brook trout the middle of July, a year ago last July, and I saw the conditions there. The bloom was all out, it was a cut-over country, and it is clay. Have you been in the Iron Mountain district?

MR. KINDIG.—Yes.

MR. LATHROP.—Well, that is what I saw. I wish I could tell all I did see, because I saw things there that I did not understand. I saw clovers there that I never saw in this soil and I did not know the name. I saw every clover that I ever saw in my life in south Wisconsin and I saw others that I had never seen before, and growing in the brush. You could walk through a tract of country there and there would be low growth, and you would see a red patch shining there, that would be red clover, and then you would see another patch by itself, white, just as white as snow, partly under the brush, partly in the open, that would be white clover; and then you would see a pink patch, and that would be alsike, and then you would see white sweet clover and yellow sweet clover and other clovers. I knew they were clovers.

A MEMBER.—Any crimson clover?

MR. LATHROP.—Well, I have seen it, but I won't say positively; but I think it was there. And in this same district there was lots of basswood, there were all the varieties there, the most beautiful basswood and hard maple as well as pine. Of course the pine was being cut off very rapidly. And I felt as though I ought to go there and put in some bees, but I have many things, many other irons in the fire, and I haven't got around to it yet.

A MEMBER.—How about the bears robbing your bee hives up there?

MR. KINDIG.—Well, the bees are up there in places, but the bear is afraid of civilization. You don't have to go out of civilization to keep bees up there.

THE PRESIDENT.—Anything further?

A MEMBER.—That may be all right, but Indiana has got some pretty good country too.

THE PRESIDENT.—Mr. MacNeill.

MR. MACNEILL.—In "Gleanings" for August of last year there was a little editorial by the editor in regard to a practice by a Mr. J. N. Harris of St. Louis, Michigan, I believe, in regard to double extracting, which is defined to be leaving the combs for, in his experience, five to six weeks after they were first extracted, until they would have accumulated some moisture and be extracted again. Since that time I have not seen anything in regard to it except a little note by Dr. Miller in regard to the time which the combs should be left, in which

he stated that they should be left more preferably two or three days rather than five or six weeks. I thought if there was a few pennies lying around loose in those combs I might as well be getting after them, so I made an investigation with my combs, and left them, according to the first article, for several weeks, but discovered that, on account of the very cold September that we had, they were practically all granulated. However, I extracted some, as Dr. Miller had stated, within a few days, and found the results were very satisfactory, at least in my case. The ordinary Langstroth extracting frame produced about four ounces of honey on the second extraction, and the ordinary shallow extracting frame produced about two ounces of honey. This interested me to the extent of investigating to find out what amount of money could be made in the operation in regard to time. In checking the time I found that a person with an ordinary two hand power reversible extractor would make about five dollars an hour by the second extracting, which I consider is very well worth while to most any of us even at a busy time of the year, and it could mostly be left to a time when you were not so busy.

In regard to the frames which were granulated, I found by setting half a dozen of them or so above a very low-turned gas flame that in a very few minutes the granulation was all melted out again, and these extracted to the full extent of the ones that had not been granulated.

I was rather interested to see the effect of such combs upon the bees after they were put back in the himve, because of course it is not all cleaned up entirely, and I found that the excitement of the bees was seemingly very noticeably decreased by the combs which had the second extracting over those which were extracted only once, presumably because the honey lying around loose in the frames that had been extracted only once was very much more exciting to the bees.

THE SECRETARY.—May I ask what temperature the honey was when you first extracted it?

MR. MACNEILL.—Well, the most of what was extracted in September I guess was at a fairly low temperature, because the whole month was cold, but a great deal of it on the other hand was extracted at the ordinary temperature, and in most cases was extracted immediately after taking out of the hive, so that there is no reason why it should not have extracted as well in the ordinary case, when the ordinary job of extracting is done.

THE SECRETARY.—If the extracting was done at a temperature of 90 to 95 degrees, do you think there would be enough honey left to make a second extracting necessary?

MR. MACNEILL.—I con't think so, but I don't like to extract at 90 or 95 degrees. If the temperature of the combs was that, I think the result of the second extraction would be very much less. However, with four ounces, I neglected to state at the price that honey brought this year, that would be about eight cents per comb, for the ordinary Langstroth frame, two cents an ounce, and four cents per comb for the shallow frame, which certainly makes very quick returns, because the second extracting of course is not nearly so tedious as the first.

THE SECRETARY.—You use a hand power machine both times?

MR. MACNEILL.—Yes, a hand power machine.

THE SECRETARY.—I don't know, I believe if you had your temperature of your honey the first time at 90, and gave them all the speed they would stand, you could speed them up twenty-five per cent higher than you could with ten frames, because with ten frames in a super your combs are thin.

MR. MACNEILL.—I don't use ten, I use seven.

THE SECRETARY.—Seven or eight.

MR. MACNEILL.—I speed it up so that I break the combs once in a while. It is a very easy matter for each one to try it and see, because I am satisfied that it pays well at the price of honey. I don't think, Mr. Bull, that the point is so much in regard to the temperature, it is in regard to the thickness of the honey. I don't care what temperature your honey is when you first take it out, the bulk of your honey will come out at a high temperature. As soon as you get the walls of your frame all cool, as it will be after the bulk of the honey get out, then the process of the extracting cools that off very fast. That will solidify and chill your honey, the point being in the second extracting that the moisture from the air—Dr. Miller said it would be better to keep them in the basement or in the cellar—the moisture going into the volume of honey left in the comb makes that liquid enough so that it will come out again on the second extracting, where it would not have come out under any temperature on the first. As far as I could see, there was not any particular difference at all after the extracting was done, as it stood in the extractor and ran out of the extractor, I could see practically no difference, and it did not sour, it was not affected in any way.

A MEMBER.—The first that you took out was just the heat of the hives?

MR. MACNEILL.—Yes.

A MEMBER.—And the second time did you have it just as warm?

MR. MACNEILL.—I did not have it nearly as warm, because I did not have the heat of the hive.

A MEMBER.—If you run your extractor long enough your combs will be dry, because I know in using an electrically run extractor we run it five or ten minutes for the whole operation, and we get good honey, and the combs are just as dry as you could wish them to be. So I should think it would pay to get a power extractor to do the extracting.

MR. MACNEILL.—Well, that is all very well and it may be all true. The possibility is that after the first few frames, when I checked up and found I was getting quite enough to make it worth while, that I may not have extracted to the full extent that I otherwise would the first time, but in any case I believe it would pay to run your machine a shorter time the first time, with the intention of extracting the second time, rather than to consume all that time on the first operation and not give a chance for the honey to liquify for the second operation. In other words, rather than to run the extractor five minutes the first time, you would save time by running it two minutes and then re-extracting for one minute, saving thus on the setting of combs two minutes, and I think you would get more honey in the end than you would by the other method.

MR. WHEELER.—I don't see, as long as you put the honey back and let the bee have it again, why the bees are not the best fellows to do the second extracting. You don't lose anything, the bees get the honey, and you save yourself work.

A MEMBER.—Why not let them do all of the extracting?

MR. MACNEILL.—Yes, that is the way some of us do.

THE PRESIDENT.—I see we have with us this afternoon Mr. Wesley Foster. We will be very glad to have a few words from him if he will talk to us.

MR. FOSTER.—Mr. Chairman, I don't know what I will talk about. I think of all the talks I heard this afternoon I enjoyed Mr. Kindig's about as well as anything. It only made me glad I lived in Colorado, where we produce pretty good crops of honey at times.

I have had a few ideas along this re-extracting of combs. Of course in my own apiary I use a power extractor, eight-frame power machines, and run them with a gasoline engine, use portable outfits that I can take from bee-yard to bee-yard and extract one or two days, according to the length of time required. We let the machine run on eight combs while we are uncapping eight more, and then we are ready for extracting again, so I doubt whether it would pay us to practice what Mr. Baldwin suggested, although where one is using a hand machine on a small bunch of bees it might produce a little more honey. I would not want to argue with him on that point.

There is one thing that I do want to say, though, about conventions of this kind. It is not the actual bee information that we get that amounts to anything, it is the pep we get here and the enthusiasm to go home to produce better crops of honey ourselves, and I believe that—well, I know there are probably scores of better bee-keepers in this room than I am, but I let the amateurs and those who only keep bees for the pleasure there is in it do the experimenting, and then they tell me about it and I go home and put it into practice and get a bigger crop of honey.

I feel a good deal that way about Dr. Phillips' wintering theories. I have put quite a little money into winter packing, and my helpers laugh at it a good deal. I am going to keep trying it out. They made fun of it all summer, and only expected one-half as much as they got from those which had wintered with no protection whatever. I am not satisfied that that is the true result. I still want to look a little further into it. With us the bees that we had packed were too comfortable, they did not begin breeding and build up as soon as those did that were wintered on the summer stand, and they did not produce as big crops, they did not get as strong, ready for the early flow. I don't know just why. I have got to work on that a little more, but that is the fact. With us all the bees that were packed seemed to be—well, I would not exactly say that it was damp, but it appeared that way. The frames and the combs had the appearance of being damp, although I could not find any actual moisture present. That is, though, we have an extremely dry climate and the interior of most of our hives is absolutely dry, so that I don't know whether that has anything to do with it or not. But I do know that I did not get any results so far from packing.

I have had bees packed now in Idaho three winters. The first winter we packed, the bees filled their hives full of honey dew and it did not do any good to pack them, they died just as badly in the packs as they did outside. The next winter it was such an open winter that it did not matter whether they were packed or not. The winter we are going through now is the third time that I had the bees packed in four-colony cases, and they are having quite a favorable winter andI expect that they will get through in good shape, but so far I haven't had any particularly beneficial results from packing in the four-colony case in the west.

Now, I think we have entire different conditions there from what you have here, and it is an expense, in time more particularly. A bee-keeper who produces honey in commercial quantities and depends upon that for his living, who has to do all of this work of packing and unpacking with hired help, it really is quite an expense, and it delays later operations. That has been my serious trouble, and in doing it at the right time or getting it done. Labor has been hard to secure and men who understand the handling of them have been hard to secure, but if I could see that I was making any money by it I would be a little more enthusiastic. However, I have not given up yet, I am going to put some more money in it and try it out a little further.

A MEMBER.—What kind of packing material do you use?

MR. FOSTER.—The only thing that we have available is chaff. Nearly all the chaff that I have had available was oat chaff. We have picked it out as carefully as we could. I use from eight to fifteen inches, and I am going to use more. In my experience the best way of wintering bees is to have an old hive with a loose cover that will blow off once in a while in the winter, so that they will get plenty of air and moisture and ventilation, and they come through better than most any way.

There is one thing I want to say, and that is that I believe that 10,000 bees of the right age are worth 100,000 at the wrong time. I have secured 200 pounds of surplus after the first of September from a one-frame nucleus in July, and it does not seem to make any difference how many bees you have in a hive if you have got them the right age and they come on just right. I do know that my colonies which produce the larger crops are those that are not too strong in May. We have a long-drawn-out season; we really don't get a good honey flow until August.

A MEMBER.—What part of Idaho are you in, may I ask?

MR. FOSTER.—I have bees in the Twin Falls district, seven or eight miles from Twin Falls, and then I have bees in Colorado. I have never operated any bees personally in Idaho; the bees in Idaho are leased. And so far I have secured larger average crops in Colorado than I have in Idaho.

A MEMBER.—What part of Colorado?

MR. FOSTER.—I operate in Montrose and Delta Counties in Colorado, and in Boulder and Adams Counties.

A MEMBER.—How cold does it get in Colorado?

MR. FOSTER.—We have had it down to 10 below zero for a very few days this past winter, and we have had an open winter, a very

fine open winter. Of course we had an open winter last winter, very different from what you had here.

MR. WHEELER.—Is that anywhere near Denver?

MR. FOSTER.—Yes, Boulder is thirty miles from Denver. My bees are located north and west of Denver, and I am right on the edge of the smelter smoke district. Our bees die very badly from what we call smelter smoke, although I suppose Miss Fowls would call it the disappearing disease. It does not seem to appear there except where it is within range of the smelter fumes. And three of my best locations are where I move in the colonies from the foot-hill locations in July, the smelter smoke seems to be most disastrous in March and April and we move them out to the foot-hills and take advantage of the spring blooms in the foot-hills, and then in the latter part of June or early in July we move them back to the alfalfa or sweet clover locations when the danger from smelter smoke has passed. I think the shaking up of the colonies in the moving does them good, I notice they produce better than those that have not been moved, partly from the better location and partly from the fact of moving. This past season the colonies which we divided produced as large a colony as those which I did not divide. Most of the divisions were made in the latter part of May or June. Of course Dr. Phillips would say, I suppose, that in this wintering, if you give them winter protection that you get the same results with less colonies. Well, that might work out all right. I haven't had courage as yet to depart entirely from the methods which I find have paid me in the past, I don't think I ought to experiment too drastically. I am trying to test out the best way of getting a big crop of honey. I have had a good many colonies that would equal Dr. Phillips', fifteen solid frames a brood, but I haven't averaged twelve. I don't think I will for some time. But it is not those colonies which produce the biggest crops, unless I can get that brood just at the right time to give me the bees before our main honey flow. It is the total results that I am after, not the individual operation per colony.

My remarks have been rather rambling; I was called on unexpectedly. If there are any thoughts that I have stirred up and anybody would like to ask anything further, why, I will do the best I can.

MR. WHEELER.—Don't you think it is the difference in location that makes the difference between you and Dr. Phillips?

MR. FOSTER.—Well, perhaps. But I would certainly, if I lost 20 to 50 per cent of my colonies every winter, I would do some drastic experimenting with the four-colony case, as he recommends. But it is not the strongest colonies in the fall that produce my largest crops the following season. It depends largely I think upon the queen and the attention I give them, and the fact that they are not too strong at the wrong time. I have had a great many of my colonies too strong in April and not strong enough in July. I believe we have that trouble every year. The seasons vary, but nearly every year I have quite a little trouble in bringing the colonies up to their proper strength in July, instead of getting them in May where they ought to be in July. We have fruit bloom and dandelion flow in May that builds them up, and in the latter part of April, that builds them up to good strength

in May, and then there is nothing comes on until alfalfa blooms the middle of June, and unless we feed they go back. In fact, there is such a dearth of pollen that feeding does not give us the desired results. Then the alfalfa begins blooming about the 15th or 25th of June, and we have a rather steady flow then for the rest of the season, up until perhaps the 15th of August, and it may run on to the 15th of September. We do not have the vast flow which people in the clover districts enjoy. We may have a few days of vast honey flow, and it may be five or or seven pounds average per day, but it would not go above that. I never had a colony on the scales that registered over eight pounds in a day. Others have had better records than that, but I haven't.

I do think one thing, and that is that we haven't given our best efforts to storing. We got behind with out work this past season and could not keep up extracting and kept piling on the frames, I had them four and five high, up to the latter part of October, for the reason that we could not extract fast enough. We were extracting out doors, though, the first week in November, when we finished up. It was hard work, but we got it done. It was better than bringing the honey in and heating it up and working inside.

A MEMBER.—You use the Italian bees, of course?

MR. FOSTER.—Quite largely. Two years ago I bought two hundred Italian queens of half a dozen different breeders and scattered them around through the yards, and then we raised a good many daughters from the better queens. I like the Goldens very much, except that they get American foul brood worse than the others. There is quite a little American foul brood around among the farmers, so that I think the Goldens perhaps were a little better rustlers and they found more, that is about the only way I can explain it. It has been my experience that the Golden Italians develop American foul brood to a greater extent.

A MEMBER.—Do they stand the winter as well as the others?

MR. FOSTER.—I haven't noticed any difference in that. I don't keep very close tab on individual colonies. With twelve hundred colonies I haven't time. I had a heavier loss than a good many of my neighbors, and I aim to make up winter losses by increasing the following spring. Out of 1,200 colonies I will expect to lose 150, something better than 10 per cent. I think it is for the reason that we didn't have time to go around and look after each colony and get them in proper shape for wintering. Help could not be secured, and the men that could do that work had to spend their time otherwise. In the last three years I made every effort I could to have as big a crop as possible, and then I had to use a good deal of inexperienced help in getting it off and getting it on the market. In fact, some of my honey did not get strained until after it was granulated and it had to be liquified and strained, which was a nuisance. At the same time, it was the best we could do. I thank you. (Applause.)

MR. KINDIG.—Mr. Chairman, I was a good deal interested in what Mr. Foster said about that packing case. I would like to ask Mr. Foster whether he made it according to Dr. Phillips' directions.

MR. FOSTER.—No, I did not make it exactly according to his directions.

MR. KINDIG.—May I ask in what way it differed?

MR. FOSTER.—I don't know that I recall exactly what his directions were, except that I had about from six to fifteen inches of chaff, top, bottom and sides, all the way around, and a contracted entrance.

A MEMBER.—How much contracted?

MR. FOSTER.—Oh, I use a hole about as large as—well, you could get your thumb into it.

A MEMBER.—Just one hole?

MR. FOSTER.—Mostly. Some of the holes were oblong in shape, and inch long and three-eights wide. That was as large as I used.

A MEMBER.—Was it packed underneath?

MR. FOSTER.—Yes.

MR. KRAUSE.—I would like to ask a couple more questions now. Have you top ventilation?

MR. FOSTER.—No.

MR. KRAUSE.—I think that is where you fall down, then. That is where we fall down in our climate.

MR. FOSTER.—There was no top ventilation recommended by Dr. Phillips.

MR. KRAUSE.—In Ontario if we top for the winter with a sealed cover we figure on dead bees in the spring every time. Now, Dr. Phillips spoke this morning, he just got on to my line, you know every bee-keeper is a crank on wintering or doing some work on bees, and I have always packed bees right from the start, and the only difference between what Dr. Phillips told us this morning and the way I am doing, I don't unpack in the summer, I keep them packed all the time. When I recommended that to some bee-keepers in Ontario they said that was a lazy man's way to keep bees, but I did not pay any attention to that, because I was getting results and that is what I was after. We experimented with it for five years, and we found the bees that were packed through the whole season did better every time than the bees that were unpacked, so we kept right along on that line. But we dare not leave on sealed covers. Now, Mr. Dunn, of Ridgeway, who is in a different climate altogether, he winters the other way, he has everything sealed down as tight as possible, but it is a different climate altogether than Guelph. But I would like Mr. Foster to try just some colonies with top ventilation.

A MEMBER.—May I ask Mr. Foster whether he has a double or single hive body?

MR. FOSTER.—I have different ones. There was a slight pre-erence for the double hive, because they were up away from the entrance and there would be less chance for any circulation of cold air.

A MEMBER.—That is where you had two brood nests.

MR. FOSTER.—Two brood chambers, one brood nest. I believe that a good deal of advantage can be derived from this packing if it is handled right. But I haven't yet been able to explain why those bees that were packed did not breed up when they got started faster than the others, and they did not. They did not produce the crops that those that were not packed produced, and I think it was because they did not get a start. The bees that were out and flying when the first willows bloomed and the first dandelions came out are the ones

that got ahead, and these packed bees, when they got started in May on the fruit bloom, they built up and they were all ready for honey flow by the middle of June, and if the honey flow did not begin until say the 25th of June, they went back, and it was the medium colonies that were just coming up at that time that produced the crops of honey.

A MEMBER.—Did that last colony have plenty of honey?

MR. FOSTER.—Yes, they had stored enough.

DR. PHILLIPS.—I would like to ask Mr. Foster what kind of packing material he used?

MR. FOSTER.—We used oat chaff.

DR. PHILLIPS.—Fine or coarse?

MR. FOSTER.—It was as fine as we could get.

DR. PHILLIPS.—Anything like straw or any coarse material is usually very inefficient for sealing material. And if you put on wheat straw, for instance, you would hardly gain the benefit from it that you would from three or four inches of sawdust.

MR. FOSTER.—We had two or three out of fifty that we examined that had begun breeding, and those colonies—Well, Mr. Bartholemew told me when he first looked at them he thought they might possibly die. None of them died, but they were weakened from that breeding, which none of the others did.

DR. PHILLIPS.—Do you mean they bred in the winter time?

MR. FOSTER.—They began breeding, yes, in January. I think they were put in a little too late, I think that is the explanation of that, and they were distrubed more, they were stirred up a good deal in getting them into the packing. That was the only way we had of explaining why they began breeding.

DR. PHILLIPS.—What time did you pack most of them?

MR. FOSTER.—The latter part of November.

DR. PHILLIPS.—About two months late, then?

MR. FOSTER.—Well, we did not get our honey off until the latter part of October.

DR. PHILLIPS.—Mr. Chairman, I would like to say one word. I did not get to hear all that Mr. Foster said about his experiments in this, so that I can't very well discuss that, but I would like to mention something about what Mr. Kraus has said about the upper ventilation feature. I have been conducting some experiments along that line. Now the way we test our colonies, watch them during the winter time, is to put a chemical thermometer in this entrance, we use a one-hole entrance, and we can just slip one of those long glass thermometers right into that. Now if the temperature of that hive at the bottom board shows in the neighborhood of fifty degrees, we consider that the wintering is fine, that the temperature around the bees will probably be fifty or more, nearly the critical temperature of 57, and where we can get the bees at that temperature we expect a good wintering. Wherever it drops below that we expect condensation of moisture and bad conditions generally. Now, the condensation of moisture we use as a symptom as to whether or not the bees are adequately packed. Wherever we find insufficient packing we find condensed moisture. Wherever we find abundance of packing we

find the temperature high enough so that the moisture cannot condense. Now, of course Mr. Krause is located in Ontario, where the winter is pretty cold, so the amount of packing which would prevent condensation with us might not prevent it with him, and so the solution with Mr, Krause is more packing. That is, if the temperature will stay in the neighborhood of 50 there will be no condensation; moisture cannot condense. That is, any amount of moisture which will be generated by the bees, and of course that is where it all comes from, will be so small in quantity that a temperature of 50 will not condense any of it and it will pass out as watery vapor.

Now, through the severe cold weather last year we found a few of our colonies showing frost at the entrance hole; that is, the moisture came out that far as vapor, and then when it hit the cold air there came a little frost around the edge, but even that is rather rare, because the current of air coming out is usually quite warm. And we found last winter, for example—we usually don't have very heavy snows in Washington, it does not stay very long, but we did have some heavy snows last winter coming up over the entrances, and the warm air coming out of that hole melted out a pocket in the snow and we had a cavity there in front of the entrance, and when we went to examine them for any disturbance to the colony itself, we found where this warm air had come out. We did occasionally find a little frost upon the entrance. But if the packing is sufficient to keep the temperature in the neighborhood of fifty degrees, Mr. Krause won't be troubled with condensation.

THE PRESIDENT.—Is there any further discussion on this? Dr. Phillips has kindly consented to answer any further questions in regard to European foul brood. I see we have here on the desk a question in regard to American foul brood. Now we will take a few minutes for this discussion, then we will have the election of officers for the ensuing year, and later if there is a sufficient number who are interested, we will have a question box and further discussion. Has any one any further question in regard to the European foul brood.? If not, we will proceed to the election of officers.

MR. SMITH.—Before that is passed entirely, I would like to ask Dr. Phillips the best way of distinguishing between American and European foul brood; that is, by the average, ordinary man who is not a scientist. We have both kinds in and around Chicago, at least I think we have, but we have what old bee-keepers, who have been keeping bees, say is American foul brood, in fact that is very prevalent all around Chicago within fifty or sixty miles, and it means a great loss here, and I think it would be of advantage if we knew some way of determining without sending to Washington whether we have American or European foul brood.

DR. PHILLIPS.—Mr. Chairman, perhaps the best way to answer that question is to say that the preventive measures for European foul brood are good bee-keeping methods, and if those are practiced and there is still disease, it is probably American. Of course there are certain distinguishing symptoms for American foul brood, very briefly as follows: The age of the larvae affected is a characteristic, in that it almost all dies after sealing has occurred, and then the bees uncap

the cells and the mains can be seen tightly adhering to the lower cell wall and running up the back. A second good symptom is the very characteristic odor. Now that cannot be described, because there are not any words in the English language quite capable of describing it, but any one that ever smelled it once is not very apt to forget it. It has been likened to the odor of a poor quality of glue, but that is rather hard on the glue.

The third symptom, which is used by inspectors quite commonly, is that of the ropiness of the larvae, and that is an unsafe symptom, because, as I said this afternoon, European will sometimes rope a little bit. But it is safe provided care is taken in the type of ropiness. Now if you run your toothpick into American material or American foul brood at the ropy time, for American foul frood, it ought to rope out four or five or six inches, with a very fine, delicate thread, whereas the European will hardly ever rope more than a couple of inches, and then it behaves like a rotten rubber band; it will stretch out a little and break across and a end will fall down. And it is not a fine thread, it is very much coarser.

With those three points, the age of the larvae and the odor and the ropiness, you can almost always tell American foul brood without sending it to Washington, or without even asking the inspector, or thing of that kind. But if the treatment for European is given anyhow, because that is what all the bee-keepers are aiming to do more or less, to keep their colonies strong and have good stock, if it comes then and stays, it is probably American.

THE PRESIDENT.—I have a question here in writing, probably Dr. Phillips will answer that: What is the best method of treating American foul brood?

DR. PHILLIPS.—American foul brood is characterized by the fact that the larvae remains adhere tightly to the cell, where they form spores, as I mentioned this afternoon. Consequently to eradicate it it is necessary to take out all the combs to which this material is adhering. Furthermore, American foul brood is transmitted through the honey, so the honey must be taken out. That means we must take out all the combs and give the bees a chance to start over again on building the new combs on new foundation and start a new home. That is, in a very brief way, the treatment for American foul brood, and it is the only treatment which can be used with safety.

Now there are cases, for instances there was an article in one of the bee journals a few weeks ago where a man said that he had met with success in cutting out a few diseased cells, and then he did not find any more of it. Well, I am not questioning his word in the slightest degree, and I would not be afraid perhaps to try it myself, but I would be very much afraid to recommend it to any one else, because the second person might not be so careful. In other words, it is a very dangerous procedure. But if we take out all the combs, the honey and everything else, and give the bees a new start, they will rarely show a recurrence.

MR. KRAUSE.—Mr. Chairman, may I ask Dr. Phillips a question? I would just like to know what benefit I would get from more packing with my bees under the present system. We winter with a loss of

about three per cent, get our colonies ready for the honey flow at about the right time, and get good average years. Now if I put enough packing there to do away with that moisture that I have got to have the top ventilation for, what benefit would I derive?

DR. PHILLIPS.—Well, I don't suppose you would derive very much, because I understand you are getting about the best crops in Ontario, and if that is the case, it is pretty hard to beat. What strength of colony do you have before the coming of the honey flow?

MR. KEAUSE.—Well, I am like Mr. Foster here, I don't want to have a colony ready in the spring of the year. If you can get the colonies ready for the honey flow at just the right time, you will get twice as much honey from your colony as you would from one that was ready say six weeks before that time.

DR. PHILLIPS.—It is pretty hard to get bees ready six weeks before hand in Ontario.

MR. KRAUSE.—Well, I have had them swarming on the 4th of May.

DR. PHILLIPS.—Now that brings up the point that was made in the small part of Mr. Foster's talk that I heard. The time to get bees ready for the honey flow is within eight weeks of the honey flow. Now for white clover, in the northern part of the United States, which I might say is the only place where white clover amounts to very much, it keeps a bee-keeper hustling to have eight weeks of time before white clover begins. He has to keep moving right along. To do that he must have three things, room, protection, and stores, and where most of them fall down is in having protection and stores but not enough room. For example, a few years ago I visited a number of bee-keepers in one of the clover states, and I found it very commonly said among them that those colonies that were too strong early in the spring were not the colonies that gave the best crop.

We generally say that about eight weeks of preparation period is right for getting colony up to maximum strength, and if you have a queen in there and plenty of room for development the bees will usually be ready just about the proper time.

As far as getting ready too early is concerned, of course Mr. Foster is in a region of country where the honey flow, as he says, comes late, and consequently it is not so incumbent on him to get his colonies strong in May as it is with us. He has two months more than we have; that is, a month or a month and a half longer. If he could just keep his colonies at the right level up to say the first of May or say the last week of April and then turn them loose, he probably would get the maximum strength. But after bees do reach the peak of egg-laying there is bound to be a slight, a very slight, decrease, but the critical thing at that point is to have plenty of storage room in the hive.

Mr. Taylor of Oregon performed some experiments a few years ago which were of rather far-reaching importance, when he was connected with the Agricultural College of Michigan. I don't remember just what cooperative plant was, but they had some experiments there, and he found that roughly speaking for every frame of brood reared in the hive it takes one frame of honey. Now if we are going after these

large colonies, it is going to take a large expenditure of honey in the early part of the year to get them. Now some years nature gives us all that. That is, you know the old bee books said 20 or 25 pounds was adequate for wintering. That is to say, if there is an abundance of honey in the spring, fruit bloom and dandelion and all the other sources, so all the bees go out and get the extra honey they need, all right. But if those things are not contributed by nature, then the colonies simply cannot increase to their maximum strength on the 20 or 25 pounds of honey which is left according to the older directions. And that is the reason why we recommend widely and generally a large stock of honey in the hive.

Now the gentleman, who is associated with me in the office, told the bee-keepers at one of the California meetings something that I had not heard before, that he had invented and patented a feeder. I know that you will all be interested in this feeder, because it is filled once, it is then put on the hive, and whenever the bees need feed it gives down just the right amont of feed. Just as soon as the bees don't need this feed any more, it stops, and then it is refilled without cost to the bee-keeper, and it is always ready for the next operation. Now he told them about this feeder, and their ears were right up in the air, and he told them that this feeder consists of super honey. That is why we recommend that for wintering, this patent feeder, if you want to call it that, because it gives down the honey as needed, and stops when it is not needed, and not one drop of that is lost, because the feed is not wasted, and if nature does co-operate, if nature sends in a nice lot of honey from dandelion or what not, it is still there and can still be extracted.

Now the only detriment to that kind of feeder is where the honey tends to granulate very quickly. Then it is somewhat a handicap to get that honey in the hive, but under all conditions it is the greatest help bee-keepers can have.

MR. KRAUSE.—I might say I winter in a hive which is equal to a twelve-frame standard hive.

DR. PHILLIPS.—What is your entrance?

MR. KRAUSE.—We like the entrance inside, with four inches of packing all around. Then we have an outside entrance, what we call the wintering entrance. That is four inches wide.

DR. PHILLIPS.—How about the bottom?

MR. KRAUSE.—It is not a packed bottom, it is made out of cedar wood, seven-eights lumber, and stands on the ground, on two by three scantling. Of course that gives you a packing at the bottom in a way, because that ground very seldom freezes.

DR. PHILLIPS.—That is probably where your condensation comes from, then, that bottom.

THE PRESIDENT.—It is now ten minutes to five and we will have to close before long. I think we had better proceed to the election of officers.

Moved and seconded the the present President be renominated.

Motion carried.

Moved and seconded that the Secretary be directed to cast a ballot for the President.

Motion carried.

The Secretary then cast a ballot for Mr. E. S. Miller as President for the ensuing year.

THE PRESIDENT.—Who will you have for Secretary the next year?

A MEMBER.—The same thing over again.

On motion, duly seconded, Mr. John Bull was nominated as Secretary for the ensuing year, and the nominations being declared closed, a ballot was cast electing Mr. Bull as Secretary.

On motion, duly seconded and carried unanimously, Mr. Edward Hassinger, Jr., was re-elected Vice President for the ensuing year.

THE PRESIDENT.—Now there was one question voted on last year, perhaps we had better consider it again, the question of the editing of the stenographic report. It was that the officers of this organization edit the report before it is printed. Do you wish the same thing done this year?

MR. SMITH.—I make such a motion, that the report be edited before it is printed.

Motion seconded, and carried unanimously.

THE PRESIDENT.—Are there any questions or any further discussion that you would like to have before adjournment?

MR. SIMMONS.—We have had two or three field meetings and I enjoyed them vey much, and I would like to suggest, I don't care about making a motion of that kind but I would like to suggest that, as to whether we should not have one this year, say within fifty miles or less of Chicago.

THE PRESIDENT.—Mr. Simmons has suggested that we have a field meeting the coming summer. Any one else on this topic?

MR. SMITH.—I move you that we have a field meeting this summer.

The motion was seconded.

THE PRESIDENT.—It has been moved and seconded that we have a field meeting this coming summer. Now that motion was carried last year, but we did not have the meeting.

MR. SIMMONS.—I would like to suggest that our officers arrange for the field meeting. I would like to include that.

THE PRESIDENT.—Before this motion is put I would like to make somewhat of an explanation. It was very difficult last year to get any help. A bee-keeper's time was worth anywhere all the way from nothing up to fifty dollars a day, and probably those who would attend would have found it very difficult to get away, and for this reason it was thought best not to hold it. The probabilities are we would not have had very many there. Now, whether the coming summer will be any better or not I don't know. It is quite a task to get up a field meeting and go a long distance, prepare a program and so on, when one is exceedingly busy. Now some of us have very little time; our time is worth in the busy season sometimes as much as fifty dollars a day, sometimes more. To get away for a field meeting is a rather difficult matter. However, as far as I am concerned, I will do all I can to make it a success if you decide to have one. It has been moved and seconded that we have a field meeting. Are you ready for the question? All those in favor of having the field meeting say aye;

contrary no. The motion is carried. Where and when shall we have this field meeting?

A MEMBER.—Around Chicago some place.

MR. SMITH.—I suppose the officers would arrange for that, when and where it should be held. I move it be left to the officers.

MR. SIMMONS.—Mr. President. I don't believe that it is necessary to put that in the form of a motion, because I understood that was to be included in the first motion. Will the Secretary read.

Motion read as follows: Moved that we have a field meeting this summer, and that the officers arrange for the field meeting.

THE PRESIDENT.—Well, if there is no objection we will not put that again, but consider that it is up to the officers of the Association to find a place and appoint the time.

MR. MACNEILL.—I believe the Association should be given a chance to vote its confidence and thanks to the Committee on Price Fixing which was constituted at our last meeting, and whose very efficient work has surely given us a very definite idea of the prices and the tendency of conditions, and made it possible for us to get what we should have for our honey.

THE PRESIDENT.—Is that a motion?

MR. MACNEILL.—Yes, that is.

THE PRESIDENT.—Is there a second to this motion?

A MEMBER.—I second the motion.

MR. MACNEILL.—I move that the Association should vote a vote of thanks and confidence to the Price Fixing Committee, and if necessary that they should be reappointed for next year for the same purpose.

A MEMBER.—They are.

THE PRESIDENT.—It has been moved and seconded that the Association give a vote of thanks to the officers and members of the Price Committee for the efficient work they have done during the last year. All in favor signify it by saying aye; opposed no. The motion is carried unanimously.

Now, is there anything else to come up before adjournment? It is understood that the adjournment is to be until our next meeting, which will probably occur in December this present year. Is there any further discussion, or any further questions? If not a motion to adjourn is in order.

MR. MACNEILL.—I believe the Association will be very glad to have a little report from our President on the very wonderful crop of honey he is reported in the "Country Gentleman" to have received.

THE PRESIDENT.—In regard to that twenty thousand crop of honey, I will say that the gentleman came down to see me one day last summer and he had his pencil along. He lifted some of the heavy hives, and he began to figure. Now, he is a much better figurer than I am. I have not been able to figure out $20,000, although it seems he did. The article was a good advertisement, though, and I have been able to sell considerable honey in consequence. I will say furthermore that while I have not made any $20,000, I have been able to pay my bills and buy a few war savings stamps, and I am very thankful.

MR. SMITH.—Mr. Chairman, there is one question that I think should be considered quite widely, and I would like to have an expression of the members as to the national foul brood law.

THE PRESIDENT.—In regard to the national foul brood law asked for, has any one anything to say in regard to that? Perhaps the gentleman can enlighten us along that line if he has anything special in mind.

MR. SMITH.—The reason that I asked is I think the time is propitious now to get one if we want it, but I am not informed well enough, as to whether we need it or not, to do any work in that line. But I think I am well enough informed on the other line to be pretty sure that if we can agree on a national foul brood law and can show that we need it, that it can be easily gotten.

THE PRESIDENT.—Has any one anything further on this? It seems to me that the question is a proper one to take up in the National Convention, which meets this evening. Before we close I want to say that the National Bee-Keepers Association meets in this room this evening at 7:30 p. m. It will be in session two days beside this evening. I think that everybody who is interested in bees and bee-keeping will be welcome to attend. Although I am not at the head of that Association, I think I can state that they will be very glad to have all bee-keepers attend.

Now, have you anything further before we adjourn? If not, a motion to adjourn is in order.

On motion, the meeting adjourned.

PAPERS READ AT THE FORTY-NINTH ANNUAL CONVENTION OF THE NATIONAL BEE-KEEPERS' ASSOCIATION.

Held at the Hotel LaSalle, Chicago, Illinois, February 18, 19, 20, 1919.

(Reported by the Illinois State Bee-Keepers Association.)

BEE-KEEPING AND THE NEW ERA.

(By Prof. Francis Jager.)

Ladies and Gentlemen: I am on the program tonight, to speak of bee-keeping and the new era. This means a certain period of time, which through some great event in history changes the natural course of things; for instance, if you go at a certain angle, something happens and we begin to go down another angle, or if we are going down we all of a sudden turn up. We have in the world's history many eras, for instance—the Birth of Christ meant the beginning of the new era, the Christian Era; the Reformation, 500 years ago, started the modern era—the Middle Ages, different ways of living—of thinking. We infer from the title of my address tonight it was a new era, which suggests that something has passed out of existence, and that something happened to put the old things out and to give the course of events another turn—as if we were at the beginning—at the threshold of new things, and I really believe that such a thing would be very desirable especially in bee-keeping just at present because we have been shifting along certain lines conservatively and it is time that a stone hits us in the head or that a tree falls on us or a mountain tumbles over us and hits us to make us change our course and to begin to go towards a more prosperous and successful method of bee-keeping.

Now the new era was brought on by the world's war; of course anything that happens is being charged to the war—and when the war makes everything new in political life, family life, in economics and in all other branches of human affairs, why should not the bee-keepers start a new era ourselves?

To understand what the new era is to be we have to understand the old era. We are very well acquainted with it and know its perfections and short comings; we have made certain progress in the past; we have developed along certain lines; have reached certain climaxes of perfection, but we are infinitely far from the ideal towards which the bee-keepers of this country must work before they will pull bee-keeping out of the rut it has gotten into and put it where it belongs.

This struck me in Europe last summer when I noticed that in all the countries through which I traveled bee-keeping is considered to

be one of the principal things of reform; one of the principal industries everywhere, especially Servia; it is considered one of the three great branches; horticulture, dairy, bee-keeping; three branches of industry.

In this country we are not fortunate enough to have attained this high standard of perfection; even at our universities, where bee-keeping is still considered to be kind of an annex, sometimes it is tolerated rather than encouraged, because a certain number of citizens in the state demand of those who are in power that bee-keeping be given attention. Even our universities have in the past done very little. I remember in our state of Minnesota we had to be lobbying in the state legislature for eight years; we buttonholed several thousand senators and representatives before we were fortunate enough to pass a law establishing a department of bee culture in the university.

But in this new era of bee-keeping there are several specific things which we have to consider. Now I am here, I suppose, just to give you a few ideas which may gradually develop into something tangible.

Bee-keeping may be considered as a science and may be considered as an industry. It is a science of course; I believe that in bee-keeping practically all sciences are represented. There is chemistry; it enters into the compounds of honey; the analysis of food and so on.

In bee-keeping we have botany; every bee-keeper must know the botany of his state. In bee-keeping we have geometry, construction of wax cells; the way the bees manufacture comb and so on is a matter for scientists to study.

We have anatomy; we study nutrition—we have to be familiar with temperatures; we have to be builders and contractors, to construct proper cellars—and so a bee-keeper has to be a scientist and has many subjects to study before he understands the branches of his occupation.

Bee-keeping as a science moreover is developed by our universities along practical lines. Before we can attain to any results in honey production, we have to study cause and effects. We have to experiment—to analyze. Our universities and schools are the proper place for this; the individual bee-keeper himself has neither time nor money nor inclination, and in most cases not the ability to carry on these scientific experiments which result in better bee-keeping and larger production of honey.

Take for instance our scientific investigations covering wintering of bees which Dr. Phillips has been carrying on for a number of years. It takes certain instruments and electrical thermometers, observations and records, which mean a large expenditure of time and money, which only the government or state can afford to have; these scientific studies have been made and published for the benefit of bee-keepers at large; every one gains a certain benefit from it by conserving the lives of his bees during winter. The result is the general production of larger amounts of honey every year.

Take the scientific investigation of the nutrition of bees. It is claimed that the bees as the result of the accumulation of indigestible matter perish in the winter. Who can take up this problem? Can any one of you? Who has the material, the equipment and the means—the knowledge to do these things?

We have certain men with proper training to do these things. They take honey to the department of chemistry and have it analyzed; they study the chemical combination of things and give us the results.

By and by we are going to find out that certain honeys from certain sources are absolutely dangerous for bees in winter, whereas others are perfectly good and conducive to good wintering.

It takes a man with knowledge, ability, money and time to do these things, so we have our scientific part of bee-keeping which we might well intrust to our universities and higher schools of education.

This is the system which has prevailed in Switzerland, Germany and Austria and other places for many, many years past; scientists have been busy in solving those questions, and in this country, if we are to obtain a climax of perfection and keep our bees well and produce large amounts of honey, we must have these problems solved for us in a scientific way. There are yet many problems which have not been solved which must be attended to and which somebody must tackle before the bee-keepers will know exactly what is what.

Now in this new era of the future of bee-keeping I hope I will see the day when every university in the United States will have men equipped with knowledge, ability, instruments, means and tools and money to carry on those experiments for the benefit of the bee-keeping industry at large. Why I am sorry that in the years past we could notice here and there some slight misunderstanding on this subject, on this so very important question. There are still bee-keepers whom I meet who say, "well, well, those fellows get good money, enjoy life, travel around—what good have we got from them? What is the use of our departments of apiculture in the State University?" A fellow told me the other day: "I went down to the university and they were taking a hive apart and ruining a colony; they are just like men who dissect a dog; make an experiment on a dog, perform the operation on the dog and if successful, perform it on the man. If the bee-keeper has got to find out the secrets of bee life, we don't care to sacrifice our colony." Dr. Phillips has sacrificed many, making experiments; a colony that dies in an experimentation to find out the scientific principle might add thousands of dollars to the wealth of the bee-keepers of the country. Therefore in the new era we would have to take up those projects in the way we are taking them up now. When I want to establish a division of apiculture, I have got to bow and beg and be very nice and smile in order to kindly and graciously be allowed to make this experiment.

The old era of ignorance and bias has got to give way to the era of scientific profitable bee-keeping. In the new era every bee-keeper will have to avail himself of the results of investigations made by the Bureau of Entomology in Washington, in the universities of the United States, as well as in Europe; the new bee-keeper will have to be scientific man, be familiar with and posted on every single scientific result that has been attained; study the bulletins that come out, and be able to diagnose and ascertain the condition of his apiary, and undertake to do the right thing at the right time.

There is one thing else that the war has done; I believe it has banished ignorance; I believe the new era is going to be an era of

enlightenment, knowledge and education; I believe the nations of the earth which have heretofore been living in darkness and illiteracy are going to have education brought home to them forcibly; they are going to have it pumped in to them; and the bee-keeping of the new era will have to be an era of educated, scientific, trained bee-keepers. Bee-keeping is a scientific thing; a practical thing. Who would go into bee-keeping if it were not for the honey which we make and which we sell, and on which we realize some money? What brings us here tonight—is it to be entertained? We come here to these bee-keepers' meetings to take home with us something which next year will help us to increase our honey production, and incidentally to increase our pocketbook.

This bee-keeping industry being a practical branch of industry—what ought it be, or should it be, in the new era towards which we are coming now? Well I am not much of a prophet or the son of a prophet, but one thing I dare prophesy, that unless practical bee-keeping and the production of honey is made better than what we have been accustomed to heretofore, we ought to be ashamed of ourselves.

I do say that during this war, when we were fighting for food—during this very last year when we were supposed to have reached the climax from practical bee-keeping, I don't believe we have gathered one-tenth of the honey crop of America. We have allowed nine-tenths of perfectly good honey to go absolutely to waste, just on the same principle of a farmer who planted one hundred acres in potatoes and when they were ripe dig up ten and let the other ninety go to rot, lay in the ground and freeze—a man would be considered a lunatic to do that; Hoover would have had him arrested—have taken the high school children and turned them into his fields and gathered the potatoes—but the bee-keeper sneaked away; and year after year they have been in just such a position. They say there are eight hundred thousand bee-keepers in America, and they say also on the other hand there has been an over-production according to the Government statistics in the United States to the amount of five pounds of honey per colony. Ladies and gentlemen, five pounds of honey per colony is what you produce on the average. Now I know that men like the members of the National Bee-keepers' Association will average one hundred. Suppose that you here are producing 100 pounds per colony and the average is five, how much does the other fellow produce? Or rather, how many produce nothing to lower the average? Therefore when it comes to practical bee-keeping we ought to be really ashamed of ourselves.

In the dairy line we say we have cows that produce all the way from 100 to 150 pounds of butter fat on the average. Suppose we have cows that produce only twenty pounds of butter fat, what would you do with such a cow? Kill it. The bee-keeper is the other way; I believe that the bees are all good, and if somebody ought to be killed, it is not the bee.

In practical bee-keeping therefore in this new era, we will have to modernize; we will have to make ourselves accessible to modern methods; human nature is so conservative, it will stay in the same spot, year after year without moving. You know the law of inertia.

I remember in physics, when I went to school, the law of inertia says a body will remain dead, at a standstill, until kicked, and the kick will set it in motion, and then it will stay in motion until it stops.

It is most wonderful law, and as long as the laws of nature apply everywhere alike, we may as well extend it to the bee-keepers—The bee-keepers will stay quiet until kicked and then they will set the thing in motion until stopped. The only trouble with this law of inertia with bee-keepers is this—so far we didn't get kicked.

There is no doubt in my mind that the desire for a larger and better production of honey exists among bee-keepers. Now how are we going to bring them to it? I said at first, we will have to modernize our equipment.

Ladies and gentlmen if you come to a Bee-keepers' Convention and ask this one and that one about his yard and bee-house and bee-cellar and equipment, and just listen, don't say anything, he tells you the most wonderful things he has—what a wonderful apiary—such wonderful bees—such wonderful hives. and bee-houses and outfit—such a wonderful cellar.

Sometime take a day or two off and go down and see their yard; you will find out that they are bragging and their description will certainly be discounted 50 per cent and in some cases 90 per cent; in other words, when it comes to a modern equipment or modernized production of honey, with modern tools and means—some bee-keepers are in the same condition as the first English railroad. There is as much difference between that and the modern locomotive that pulls 100 cars to-day; and so it is there is as much difference between the careless, negligent bee-keeper. We have to settle down to modern, standard hives, modern equipment, wire frames, with full foundation, full sections in the comb, perfect bee cellars for wintering, perfect extracting outfit, knowledge of the system and methods of modern bee-keeping.

I made a little experiment in the University of Minnesota. Out of 170 people sitting in a room like this, just to satisfy myself, I asked them how many know the right way of hiving a swarm? I forget exactly how many there were; I think about a dozen; I called on one of those dozen to describe it and he could not do it right.

I told of the system of hiving a swarm of bees twice in the school, and after I told it twice a student could not repeat it correctly; it is so hard and so difficult to catch on to the right way of keeping bees that it takes drilling and drilling and demonstration without end before the dull minds of bee-keepers of the country will grasp the fundamentals of bee-keeping. What use are our books of instruction on bee-keeping when the thick covered mind of bee-keepers cannot be penetrated by the clear facts and understanding of the underlying principles? The ignorance of the principal phases of bee-keeping is so great that the bee-keeper who has a perfect knowledge of bees to-day is the sad exception; I say sad exception because he is the loser.

Then in this new era of bee-keeping, ladies and gentlemen, we have to fight this terrible disease of foul brood which is threatening to-day to destroy the industry of bee-keeping in several of the very important states, which in spite of the efforts we are making is spreading just

the same. Of course we have bee inspectors. If you ask them how foul brood is, they say it is vanishing, vanishing, but I know at the same time foul brood is not disappearing—but the area over which it has spread today is much larger than it was last year and has increased and is increasing more and more every year.

The system under which we have been fighting this foul brood in the past has been entirely out of date and insufficient, for the simple reason that foul brood has increased. There is no prospect in sight that foul brood will disappear or vanish, and therefore in this new era of bee-keeping—in the beginning of this first year of peace, we will have to get our heads together, ladies and gentlemen, and begin to devise new and radical, different and more efficient ways and means of fighting this terrible scourge.

In the past we have men in the State appointed by Legislature, getting a certain salary; the State says, you go and kill foul brood and destroy it. Those men each work at random in his own State without regard to each other; they have no relations whatsoever with each other.

If we ever want to get rid of foul brood we have got to take organized action.

Some people, speaking to me, defend the system of national control of foul brood. The national control of foul brood certainly has its good points; it would subordinate all the foul brood activities of the United States into one system. The national control of foul brood would be most efficient because if anybody has money to spend in the education of foul brood the Government has it, and if the bee-keepers of the United States would unite on a problem of this kind, probably it might be the most efficient one to eradicate this contagious disease. If we are to keep our State inspection and eradicate foul brood by our State laws, we will have to adopt a more efficient system; one man cannot do it. The future of bee-keeping will require county inspection. It will require that under one head there will be a sufficient number of inspectors to control the situation—to control foul brood in all parts of the world wherever it appears. The matter of foul brood, both in Europe and America has to be understood. There are a number of bee-keepers in the states who have never seen it although they have it. There are bee-keepers who do not know it after you show it to them, and this because of lack of education.

Now to control foul brood there will be two things necessary, one a system of education, educating the bee-keepers to know it and how to cure it and how to take care of it. This must be done through our universities, short courses, through our bulletins and instructors. I believe farmers clubs in different counties ought to be perfectly familiar with foul brood and be able to show it to their people. No man should be appointed county agent in the United States unless he can qualify on this one point of foul brood.

Under this system of education we might as well include the system of the prevention of foul brood. How many people know the old system of placing one hive by the side of others, two or three inches apart is the most efficient way of spreading the disease of foul brood. When the bees of one hive mix with the bees of neighboring hives,

when the bees of one hive catch the disease, foul brood, in a few minutes the whole apiary has it.

Putting bees at square angles, far apart, different directions, prevents the bees entering other hives and the disease is less likely to be carried. There are hundreds of little tricks like that that bee-keepers do not know.

Preventing foul brood, by instruction and education, helps a little, but when it comes to the eradication and cure, you cannot and will not prevent by education alone. If you ever want to get rid of foul brood in this new era of bee-keeping, we have to have State laws regulating foul brood inspection and education by severe penalties; that means a bee inspector has to be a State or Government officer, with police powers. There are universities in this country, departments of entomology, which still maintain an old bee inspection in their department, which is an absolutely wrong idea. A university cannot exercise policy powers; if a university or school or education has teachers or professors who are policemen it will sooner or later have the odium of the people of the State because the police powers are always hateful to the people, and for this reason the best institutions in this country discard police powers and do not want to have anything to do with them; in other words, the inspection of bees has to be connected with the State policy department.

Every state in the Union ought to be divorced from inspection from the schools and universities and have it organized in the proper department where it belongs, and if the bee-keepers in the different states do not take this matter in their own hands, and let it drift along, we are going to be just as inert as we were in the past year before we received the "kick" to move forward.

Why are police powers necessary for bee inspection? Because when it comes to going on to a man's property and he does not want you to, he is nothing more nor less than a mule; when you touch a man's private property, his whole nature resents it; he objects, he drives back the intruder; he will not have you interfere with his affairs; among bee-keepers we find that again and again; inspectors are being driven back; in our State a man was nearly shot one day; the bee-keeper said: "This is my property and no living man can touch a thing on my land." When we meet a man of this kind, of that Bolsheivik disposition, German stubborness—the thing to deal with is the police department, rather the police powers; a bee inspector should of course kindly and politely with power and authority if necessary, bring that man to time, because by the laws of the country in which we live any man is free to do what he pleases if he interferes with the rights of his neighbor and who interferes with the rights of his neighbor more than the man who keeps bees with foul brood in his yard year after year, ruining his bees and mine?

Stringent powers on the part of the Government to deal with the question under systematic management is the only hope that foul brood will not spread. You know what a menace this foul brood is to our industry, and if you realize it you would go to work and agree what is best to do—but if we do not decide which is the best way, how can we do anything? There is not a single state in the Union to-day that

has a perfect foul brood law or perfect foul brood inspection. To prophesy about things in the future of bee-keeping? There is one more thing that I would like to bring out; in fact there are many things that have been touched upon here. One thing is the matter of instruction in bee-keeping. The bee industry, my dear friends, we call it bee industry; I do not want to offend my friend Dr. Phillips, but I do maintain the time has come when our industry ceases to be a baby industry. We have had in times past, our steel trust which was a baby trust in the early 80's to such an extent the Government had to give it a milk bottle in the form of appropriations to keep it alive. Our railroads were fed on Government milk; for a while our Standard Oil Company, in the beginning, had to be nourished to life by a kind Government; it is surprising how those babies grow and how they develop and how big they get.

Our dairy industry—I remember in our dairy industry, there was a time when the dairy industry was just a toy; you remember in the early 80's what butter we used to get in those days. On Sunday when the farmers came into church, they churned Saturday night, brought in the week's production; all the town shipped in their butter; one person in a little round roll wrapped in paper or in cheesecloth; another one made a brick out of it, wrapped in different kinds of containers; and they took out tea and sugar and coffee; the grocerman put the butter in tubs and mixed it up and sent it to market next day, and this was the great dairy industry. Now look at it—with the butter production soaring higher and higher. What an industry it has become? How that baby has grown until the marketing of butter alone amounts to millions and millions of dollars.

The remarkable thing with all these babies is this: When the birds or robins hatch in the nest they get to be a certain size before they fly; one day they crawl up on the edge of the nest and look out on the bright world, open out their wings, and they try to fly; they fall down but they have accomplished their object. They have escaped from the nest and have begun to shift for themselves.

In baby industry when they get to be real big they begin to emancipate themselves. But in bee-keeping—the baby stays with the mother and wants to be nursed by the mother when they are four and five years old. For instance: In our universities we have a department of botany; we study different flowers and plants; all those plants are the legitimate subject of that branch of botany; we have zoology, and study all the different animals; we have mineralogy and study the minerals which all belong to the family of the mineralogist; some of those plants of the mineralogist gradually grow big and begin to develop into an industry, and when they begin to become independent and able to fly, they jump the parent nest of botany and zoology and branch out for themselves as a new branch.

Now for instance, a cow belongs to Zoology, and when it comes to the dairy and cheese and cream factory and the production of milk and butter, why the cow steps out of zoology and becomes an industry by itself, which is called the dairy industry. In the same way, the steers belong to zoology, and they are shipped to the stock yards in Chicago, and there we have to deal with the industry of the packers.

When we begin to can beans, we have the industry of canning—but my friends, the poor old bee never quits its parents. The bee belongs unto entymology; entymology is a family of bugs; we study June bugs, mosquitoes, bed bugs, flies—all the branches of insects which hurt our plants and trees; all the wicked insects which hurt our crop; in fact, the whole family of entymology has a rotten reputation, and the family of insects is the biggest in the world; they say they found 196,000 different species, every one as bad as the other except two, that is the silk worm, out of which we get our silks. Now this worm has left his associates and the word has established the industry of the silk production; it is a big industry now—but the poor old bee—she is still in the department of entymology, and she is handled in just the same old way. And she belongs in entymology just as much canned beans belong in botany or butter belongs in zoology.

Bee-keeping has grown away from the study of zoology and I dare say that in the new era towards which we are coming we will have to make an industry out of it just like the dairy or canning industry; I do not believe you are ripe to take such a wonderful step now—but probably you may find it opportune to begin some of these ideas now, and you may use them again in the future, and I do hope and wish bee-keeping is going to be organized on the basis of a solid American industry.

As soon as we begin to realize that bee-keeping is an industry we will go into it as industrious people and begin to produce honey on an industrial basis.

Just like our boys over in Europe have made a record for themselves and have shown to the whole world the metal of which the American spirit and character is made of—so the Europeans look to us Americans for ideas and leadership in all branches of human knowledge, and also they look to us for light and guidance in matters of bee-keeping.

Are we going to be true to our standard and reputation which the nations of the world are giving us or are we going to be just fakers pretending that we are great lights when in reality we know in the secret of our hearts that we are not.

I was surprised in Europe the last two summers, wherever I was, what an admiration the Europeans have for everything that is American. In the first place—for our boys. When they came over to France they braced up the drooping spirit of the French and allies; they came there with smiling faces and courage, and they joined the army of the allies—and you know what they did—they broke the German line—and how did they do it? Just with the "I Will" which nature has put into the American people, by which they simply go ahead—a "Will" which nothing in this world can stop'

It is no secret at all with our army in France; that when we first appeared in the front we had pity for those innocent boys; the French gentlemen said, "I tis a crime to have those boys killed and slaughtered" —and I heard in Paris, again and again, that the policy was to retreat; they were ordered to step one step backward. They asked, "Why step backward?" An American to take a step backward, never. It was positive rebellion against the military rules. One of the boys said,

"Captain, how do you retreat? We didn't do that in Texas." Another one said: "What page is it in our instruction books, I could not find it."

Do you catch the spirit?

And when the American Capitain was charging up the hill, being faster than the rest of them who were loaded down, when he reached the top, he turned to the boys and called—"Come boys, come on, what is the matter with you, come on quick, do you want to live forever?"

The spirit of undaunted courage which forbids an American to take a step backward. If the bee-keepers do not follow the spirit of those boys in France, we are not bee-keepers at all.

Just to show you in the new era what we ought to be! You know there were 20,000 American soldiers down on the Italian front. When Italy began to run from the Austrians a year ago, after one million and a half were captured and the rest ran—to stop that rout—out from France there rushed trains and trains and trains of soldiers of American boys; they sent 20,000 down to Italy. When they came to Italy they stepped right in the front of the running Italians and told them to stop—"Now you boys go and fight and if you are killed we will take your places."

Now this is the spirit of the American boys—never acknowledge defeat, and in times of emergency when things look ever so black and despairing, go to it with courage and energy—tackle your subject just as if nothing had happened—make up your mind you are going to win or be killed or die; that is the true American spirit.

Now we who are left behind—are we of different extraction, of a different nature; are we, the bee-keepers of this country, not related to them? The same blood, the same people we are, and the same heart and spirit ought to be in us.

There is foul brood, enemies of all kinds, failures of all kinds, problems to meet in bee-keeping, chronic cranks.

Now our boys never were cross, they took everything good naturedly and carried victory against all obstacles. The Island of Corfu was infected with submarines—France and Italy and England tried their best for three years, and were sticking their heads together—how to do it, and one day last June, out from Malta, a little island in the Mediterranean, quietly in slipped the American fleet led by a large United States battleship and took up their position to accomplish the job which France and England could not accomplish in three years; our boys came to Corfu and sized up the situation. I asked them what they were going to do? Oh, we just came down to do a little hunting." Well can you imagine it—what puzzled the heads of three governments, those boys talk in a flippant manner? I saw those boys three months afterward and they spoke again of these things. I said to them—"How did you spend your summer?" "Oh, it was dandy. The hunting the first couple of weeks (hunting submarines) was fine but it is getting awful rotten now." There again you have the spirit of the new era.

The National Bee-keepers' Association and the State Associations and the Government have tried for years to do certain things. We have fought among ourselves terribly about this and about that, and

the National went this way and went that way, the State Associations joined it and dropped it—now the new era is here—we will have to be like the American fleet—we are going to solve this problem.

Just like we did the Panama Canal. The French spent millions of dollars—thousand of lives, and they could not do it. They claimed they were smarter than the Americans—more persistent, hardier laborers than Americans—and that the Americans could not dig that canal.

Americans went down there and said, "That is nothing to dig a ditch across that hill." They accomplished it, finished it and it is working to-day.

With this spirit, we have covered America with a network of railroads. America, only a little over a hundred years old, more than all the governments of the world. We can accomplsh anything—not because of our position, our wealth, our opportunities, but because we are Americans.

Speaking of the new era of bee-keeping—there are mountains ahead of us, behind which the entrenched enemy is waiting for us with machine guns and amunition; there are opinions that have to be overcome—but when it comes right down to the true American spirit, we disregard and discount all those mountains of differences, all adverse public opinion, and all those dissatisfied men who are trying to oppose us, and say, "I Will;" this must be the spirit of American bee-keepers in the future; no matter what opposition we may encounter, we are going to go ahead with our research work, our State organizations, our county organizations, our marketing organizations, our National Bee-Keeper's Organization, and so on.

Another thing this war has brought is the spirit of democracy. In the old era there was one man who directed the destination of the nations, with crown on his head he walked along, and before him were his most obedient servants. When the peace conference in Paris in 1872 held its sessions to decide the future of the world, we found in Paris only crowned heads; they decided what is to become of the different countries; the people had no voice in the government; all they had to do was to bow down and accept the decisions of the crowned heads; now autocracy has been killed and buried. The smaller autocrats and big have gone, and those few who are standing feel the ground is very uncertain—and we see in Paris today another peace conference at which there is not one single crowned head, but where every one of those men is a representative chosen by his own people.

We are coming into a new era of absolute democracy—an era of surrender, so called opposition has gone for good and forever; and well for us that it is so, because the rule of the autocrats for the last 5,000 years has proved to the world what a failure it is; it has been a rule of war, injustice, suffering, bloodshed. The new era of democracy is here—What will this be among bee-keepers? I leave it to you to judge and for you to decide what democracy in bee-keeping will mean. What will it mean to the National Bee-Keepers Association? We have been quarreling for years and years, and we have been asking—What is the trouble with the National? Why does it not develop and have

more members; we could never get down to the very bottom of this question of the National Association.

I dare to make the suggestion, I may be wrong, and if wrong I am always willing to yield to the majority—as long as you make any kind of a society or any kind of organization of one man power, or the autocracy of a few, so long you are going to have the old system which is bound to die.

So long as the National Bee-Keepers' Association or any other democratic body, where every one who is a member of it will have the same rights and derive the same benefits, and the whole body be the representative vote of all bee-keepers—where the motion to move forward, just like in the Balkans, not come from the commanding general but where the members themselves in a democratic way move forward in their enthusiasm, take their democratic leaders with them—when the movement will come from the multitude, then you will have success.

When out of the 800,000 bee-keepers of America will come a motion for forward movement—then we are going to have National democratic Bee-Keepers' Association and as such, victorious, harmonious and extremely effective.

But one thing is true, as shown by past history, you cannot take a man with whip and drive a hundred thousand men to his ideas because American manhood and American womanhood will turn against such a man and crush him.

The future of our organizations must be democratic, for the benefit of all—a democratic organization where every one has an equal chance, an equal voice, equal representation—equal rights and responsibilities—therefore if you want to succeed—be democratic and drop every kind of autocracy, no matter what kind it is.

PUSHING TO THE FRONT IN BEE-KEEPING.

(Miss Iona Fowls, Medina, Ohio.)

In the past there has probably been as many as 95 per cent of the bee-keepers that have been compelled to work practically alone and have had little or no chance for comparing results with others, and so it is small wonder if they have not grown as rapidly, and it is also but little wonder that they should have been contented with sometimes a mere living.

That is going to be all changed now. Those bee-keepers who might have been having a thousand colonies and might easily have managed them, have been quietly contented with about two hundred or less, and even those perhaps were not taken as good care of as they should have been, but I think now bee-keepers are going to wake up and pay a little more attention to not only the number of colonies but also to giving them better attention. There has never before been such an impetus as at present to better bee-keeping. The journals and bee literature, Government work, and plenty of available labor, high prices, good crops, and a ready market, all of these we have now, and what more could we ask for? Certainly nothing more, except what we ourselves can supply.

It is inevitable that three of these conditions will gradually change. In fact, some are beginning to change somewhat just now. But that should not worry us, because it is pretty certain that these good conditions that have come have come to stay, and we are pretty certain that no bee-keepers in the past have ever looked to a brighter, better future than the bee-keepers now; when the words of Emerson are probably truer than ever before, that "We live in a new and exceptional age. America is another word for opportunity." And that since the war has a peculiar significance for bee-keepers. In all beedom the outlook is larger, freer than ever before, and people are coming to look on bee-keeping as a science.

It used to be that people thought bee-keeping might be learned in perhaps a few minutes. Various times I have had letters come to me saying: "I am becoming interested in bee-keeping, and will you please tell me all you know about it. I want to start in right away and make it my life-work." That was the substance of several letters I have had.

I think that feeling is changing. Many of the bee-keepers are now talking in much larger numbers in speaking of the colonies than they did before, and we have ever so many bee-keepers who have over a thousand colonies now, and they are beginning to realize that their work should command better returns, and that a great deal of the work that they have previously done themselves should be turned over to helpers, people working under their supervision. At present we see what is perhaps the beginning of a stampede into better bee-keeping. A great deal of this is done quietly. People are seeing their opportunity, and are not saying much, but are rapidly taking up the best locations. Of course there are many good ones left. But some are going on a bigger scale than many of us perhaps know of. I know of a few that are even going down to the tropics. One man told me he was backed by over a million dollars. He is just starting in, but he is not saying much about it.

This larger field that is opening up is made possible partly by organization, and by the interchange of views concerning diseases, management, etc., through the bee literature and Government work, and also this larger bee-keeping is helped a great deal by a few other factors, such as the auto-truck. In times past very good locations have had almost no bees there simply because of the poor transportation facilities, people could not reach them. Now the big trucks are beginning to run all over the country, and in two or three years all of our large cities will be connected with these large trucks, running regularly two or three times a week, and the bee-keepers can easily take advantage of these and can move their crop without needing to own a truck at all. And as it goes on, these lines are going to extend all over the United States. We have one right now that is just starting between Cleveland and Toledo, so that we will have the use of that this next year if we care to.

And migratory bee-keeping is also another factor in helping. Some twenty years ago migratory bee-keeping was rather expensive, and it was tried on a smaller scale, but year after year they have been growing

into it. In lots of localities they could not afford to keep bees at all unless they could move from place to place.

The "let alone" bee-keeping many would mention as a very important factor in bee-keeping, because many say that bees may be kept in this way with profit. However, as long as disease continues and continues to increase as it has been doing, even as our Government reports show it has done, I do not feel very enthusiastic about "let alone" bee-keeping. But I will compromise to this extent, I will say that with large colonies, large hives, and freedom from disease, I believe that colonies might be managed, apiaries, at a greater distance, and thus more handled with much less work than we used to think necessary.

The time has come, I believe, when more of us ought to keep more bees, and we have been contented with altogether too small a number. I think that it would be profitable even for our large bee-keepers to keep more. In fact, I think about the largest bee-keeper that is here intends to increase, perhaps double, the number that he has.

In increasing the number of colonies, one naturally thinks of the trouble of managing so many more, and of the lack of helpers, and perhaps the bottling might occur to him, and the fear of competition, and many other objections. And yet to a real American there are not any of those obstacles that cannot be overcome very easily.

In the first one that we spoke of, the difficulty of managing so many might very well be answered by an old quotation, I don't remember who said it, but he said that every man stamps his own value upon himself, and that we are great or little according to our own will. I think just as soon as we can come to grasp that and believe that, that three-fourths of our difficulty will disappear at the outset.

In regard to the difficulty of obtaining helpers, if I should judge from the number of applications that have been coming in for work in our apiaries, I don't think there will be any trouble. There is hardly a mail that comes in that does not have a letter from some one that would like to serve an apprenticeship and learn the business. They are willing to do this sort of work at a low price for the sake of learning in large apiaries, so such help as that it is always easy to get.

To get more experienced help is not quite as easy, and yet one good experienced man can usually manage two inexperienced ones to advantage, and of course an inexperienced man of one year will be experienced enough the next year so that they can take a foreman's place and have a couple working under them. And some large bee-keepers find it possible to keep their experienced man or men, as the case may be, through the year, by planning their work right, and can leave enough work to keep him busy all the time. So all we need to do is to get inexperienced men, which is always an easy proposition.

And the bee-keepers of this year, I am sure, in hiring their help, will give the soldiers, the disabled soldiers, the preference. That is something that I am sure all will be glad to do. We had a letter just recently from a soldier who has been at the front for a year, and one arm is gone. He had a little experience in bee-keeping, but not very much, and when he came back he did not think so much about his

arm being gone until he came back home and then saw everything as it had been and realized what it was to be now, and he was pretty blue for a while, and when he wrote he said he had been out with some of the boys and they had been getting rabbits, and he got just as many as any one did, and then he said they went swimming and he found he could swim just as well as ever, and he went on and told the different things he could do, and he said he decided he could keep bees too, and so he has arranged, has a little hook on his arm, and, as I believe you call the, screw-eyes in all the supers, and he has that fitted up now so that he can go right ahead and do his work in good shape, and I think a man like that has determination and is going to go ahead and make good, do even better than he did before, perhaps. I think it would be a pleasure to have such a man work for one. I think we ought to be glad to have them.

And the lack of money, that ought not to deter any one from going into the business heavier. As far as the bees are concerned, of course any good bee-keeper will have ways come readily to his mind as to how he can increase by making nuclei perhaps at swarming time, or waiting until after the honey flow and then make an increase, and can easily build up to a large number. And a man who has the money certainly should not hesitate, for where would you find anything to give you such returns as that. Probably all of you have had some time or other 100 per cent return from your bees, and I know of several bee-keepers this year that made over $20,000—I don't mean made that, I mean sold their honey for over $20,000, and I think there is one bee-keeper in the west that sold his for $28,000. Now, I suppose that bee-keeper probably had less than one-tenth of the money invested that he would have had in order to make that much money from farming.

In regard to bottling, some bee-keepers will continue to bottle, and will find that it pays them well. Others, no matter whether they have a few hundred or whether they have a few thousand, will decide that it pays them better to raise honey and let some one else do the bottling. At least we have found that true. Different bee-keepers have told us that they have found it true. In our own experience at Oberlin we have gotten almost out of the bottling business, simply because the big bottling concerns have crowded us out, but we really think we are doing better by just devoting our energies to raising the honey and selling it in bulk. Of course, some of our large bee-keepers are continuing to bottle, and say they are going to sell honey any way they can, in the bottle or in bulk or any way, just to sell it. That will rest with the individual bee-keeper.

Last fall there was one bee-keeper who sold about a thousand dollars worth of honey to one person, a large firm. That firm came right into his own town and sold that honey, it was before there was any drop in prices, sold that honey at a lower price than the bee-keeper could afford to put it up and sell it at to the retailer, notwithstanding that the middleman had made his profit in between.

In better bee-keeping it will be necessary to have better locations. Some of us have been contented with locations that have been very poor in comparison to what we might have had—in comparison with

what we hear about on the northern peninsula yesterday. Sometimes a poor location can be fixed up very easily. About twenty years ago our location was very poor, and we bought $100 worth of alsike clover and sold it at cost to the farmers around. That clover seeds itself, and came up continually, year after year, and it has not been necessary for us to repeat that since, and there is plenty of clover now.

Perhaps one is crowded out by bee-keepers, so that it would not be practical to try to improve his location. In such a case as that he had better move to a new place. So many of us happen to be in a certain place and there we stick, no special reason, perhaps we have friends there. But then we will have friends wherever we go, there are nice people everywhere, as far as that is concerned. Why not move to one of those ideal bee locations? I don't know how the rest of you felt about it, but I was really enthused by what I heard about the northern peninsula yesterday. That is a place that it would be worth while moving to and trying it out. I have heard a good many speak of this northern peninsula, so I know that is not just a pipe dream. It really is a wonderful place. And there are a great many good places besides northern Michigan. There is northern Wisconsin, and northern Ontario, and British Columbia, and California and Arizona and Texas. There are good places in New York, and I was in Pennsylvania just recently, I was east, and found what good locations there were there, that were not taken at all. And the farmers in a good many places would cordially welcome the coming of bee-keepers, simply because their clover has so little seed, practically none, just because they need the bees.

This old fear of competition would perhaps discourage some from larger production, but I heard some one say recently that he thought that that fear should be relegated to the dark ages of witches and hobgoblins, and I think he is right. I think a bee-keeper ought to be efficient enough so that he can crowd out the little bee-keeper. Of course any bee-keeper can expect to have a few satellites. That should not trouble him. That is really a compliment to him.

A short time ago I was riding out in the country, and I noticed all along the road, at farm after farm, long narrow pits, and on inquiry I found out that ferrets were being raised in those, and as we continued we saw more of them. I said finally: "Well, is this a specially good locality for raising ferrets?" The answer was: "No, it just happens that this man over here in the corner has made a success of ferrets."

According to our Government reports, we are producing something like 250,000 pounds annually of honey, and this is only about 3 per cent of the amount of sweets consumed. And yet the reports claim that there is enough nectar available now, if we could only have enough bees to gather it all, so that we could produce as much as all the sweets combined. Well, if the bees use up twice as much as they store for surplus, perhaps Dr. Phillips would put that a little higher, but with those figures it would mean that we would be getting eleven times as much as we are now getting, and I think eleven probably is a small number; I think probably we could get much more than that.

Some people perhaps would say they would like to go into bigger bee-keeping if they only had a chance. But if any one has been waiting

for a chance, he really does not want to wait much longer; the chance is right here now. This last summer there was a young woman came to the Pritchard apiary and she was quite enthusiastic about the bees. She said: "I wish I were a great, tall, broad-shouldered man and I would go into big bee-keeping, that is what I would like to do." He said: "You don't need to wait for any chance, you have it right now, it is yours just for the doing." There is no reason to-day why a woman who has experience and a little intelligence cannot go ahead and superintend such work just as well as a man."

About twenty years ago a man was standing looking out of the window of his real estate office, and he saw coming down the street a young man, athletic in appearance, right in his prime, riding down in a one horse wagon, going to his ten acre farm for a day's work, and the real estate man had been a cripple all his life and had been working against difficulties, but he had a whole lot of push and determination, and he glanced out there and he saw this young giant riding along contentedly back of his ambling old horse, and he just took one look and said: "There is one of your young men that says he doesn't have any chance." This man that I am speaking of, this real estate man, is a very successful business man in that city to-day, and the contented man was seen just a few weeks ago working on the street with a shovel.

Among the qualities that are certain to ensure success we would mention, first, a strong self-reliance, assurance, based on one's own experience as well as the experience of others, coupled with an open-mindedness and a readiness to accept suggestions from other sources, no matter what that source, even if this involves giving up a pet theory, and that is always a hard thing for a bee-keeper to do. And then besides this there should be stick-to-itivesness. Bee-keepers need that more than anything else. Certain seasons come when for some reason or other the crop is very poor. We need to look ahead, and we need to have a firm enough faith in our business to know that in the long run bee-keeping does pay and pays well. That will help to bridge over these times.

Seven or eight years ago or some such a matter in Oregon they had a very poor season, and many of the bee-keepers were completely discouraged. W. J. Manly told at a convention at that time what he had been doing. Lots of bee-keepers were ready to sell, they had all the bee-keeping they wanted, probably the bees all dead and nothing left but the hives in many cases. Mr. Manley took that opportunity and went around and bought up all the old combs he could find. He did not always buy, some of the farmers were glad to give them away. He said sometimes he could get a whole wagon-load for nothing, at other times he paid a dollar for a wagon-load. He loaded up the old combs, and gave a dollar for the wax, and so it turned apparent disaster into something that was rather profitable for him.

Just this last year one of the New York bee-keepers lost practically all of his colonies through foul brood, and he had to go to building up more, but he managed to get together a little apiary, and this year had an average of 280 pounds per colony, and at the price at which the honey sold we can see whether that paid or not.

About three weeks ago I was in Pennsylvania and a man spoke to me about the bad luck he had had. When he finished his story I did not think it was bad luck. He said that his bees had foul brood, so that he was completely discouraged, he did not know what he could do, and he treated them as well as he could and united the fragments and out of 800 colonies he had left 200. Those 200 he built up to 500, and started in this spring with 500, and sold his crop for over $20,000.

Those are a few instances to show whether stick-to-itiveness is necessary to the bee-keeper or not.

Above all else in pushing to the front I think bee-keepers need vision. It is impossible to come to a convention like this, to exchange views with bee-keepers, and not be fired with a greater enthusiasm. Well, what is that worth to us if it stops there? What are we going to do with it? I suppose there is not one in this room who could not do much greater things in bee-keeping if he would; not one who could not double or triple his output if he really made up his mind to it. I suppose that ten years from now some of the people who are here in this room will be just about where they are now, and others will have at least double their success. And the difference I don't think is a difference in ability. I will grant that that has some part in it, but I have seen mediocre men push ahead of the other so often that I am going to say the difference is not in ability, the difference is that somebody to-day saw the opportunity and grasped it, and began laying their plans accordingly. (Applause.)

DR. PHILLIPS.—Mr. Chairman, I would like to commend the spirit of optimism which Miss Fowls has manifested in her paper. You know it is impossible to tell the truth about bee-keeping without being a liar. (Applause.) Now, some of the things that Miss Fowls said would undoubtedly be considered as over-statements by many of the older bee-keepers of the country, and I think that she would admit that very readily. At the same time, we know perfectly well that she has under-stated the case. She does not dare tell the things that she knows to be true about the bee-keeping industry, because, as I say, you can't tell all the truth without telling lies about it.

Now, some peculiar things have happened in bee-keeping in the last ten or fifteen years, since I have had an opportunity to watch it more closely. We have a lot of bee-keepers in the United States to-day who were leaders in bee-keeping at that time. They are standing exactly where they did at that time. They are having about the same number of colonies, perhaps a few less, and they are pursuing exactly the same purpose and are making no progress whatever. But there have been a large number of men who have simply slipped something over on the bee-keeping industry, men whose names are not known, men who unfortunately are rarely seen at our bee-keepers' conventions, and men who have made an astonishing success of bee-keeping by perseverance.

Miss Fowls has suggested the difference between these two types of individuals. I would like to put it in a little different way. Miss Fowls might be accused of preaching a sermon, and I know I shall be when I get through, but it seems to me that the fundamental difference between a progressive bee-keeper and a poor bee-keeper is that the

progressive bee-keeper is filled with doubt. The man who stands still in the bee-keeping industry is perfectly satisfied with his methods. He is perfectly satisfied with the methods that he pursued and his father pursued and his greatgrandfather pursued, perhaps, in the bee-keeping business. But the man who grows in the bee business is never satisfied with the information which he has. He is always seeking new light and is always gathering together new observations and formulating from those scientific laws on which bee-keeping practice is based.

Now, during the past ten or fifteen years I have seen men start out with a few colonies who have sold their crops for larger amounts during the past year than Miss Fowls dare give. There are lots of bee-keepers who sold their 1918 crop for larger amounts than Miss Fowls stated. And those men are characterized by a constant dissatisfaction with their methods of practice. And I think that is the kenynote to success, not to be satisfied with the practice we now have, and always to call in question everything that we have been doing constantly to see whether it is just exactly right; to make new observations, formulate new data and work out new methods; and we have a lot of men that are meeting with wonderful success doing that thing.

Now, as far as opportunity is concerned, if you will let me refer to one other thing perhaps that will emphasize the point that Miss Fowls made. During the past year and a half the Bureau of Entomology has had perhaps thirty men doing extension work in bee-keeping. Very few of those men are left. I do not think it was because they were not treated exactly right, or anything of that kind, I don't think that was the primary consideration. But those men have seen an opportunity, as soon as they got out and had a look at locations and saw the wonderful opportunities that were being uncovered, they said they simply could not stand the pressure.

We have some good men now; there are two or three of them hanging around here now, and we don't want to get rid of those men. But we are going to lose them, there is not any question in the world about that. Those men are seeing the opportunities in commercial bee-keeping, and they are seeing opportunities which are absolutely real, which the bee journals and the bee books and so forth dare not give in full for fear of misrepresentation. And so the sermon I would like to preach in the matter is, not to be satisfied with the method of practice which you have found moderately satisfactory. (Applause.)

A NEW ORGANIZATION OF BEE-KEEPERS.

(By Mr. Colin P. Campbell of Michigan.)

Mr. Chairman, Ladies and Gentlemen of the Convention: It is with some temerity that I stand before you this morning to suggest to you something about organization. I have been familiar in my past experience with a great many different sorts of organizations among varying industries. I do not mean to say by that that I have been interested exclusively in organizaing, for I haven't. It has been a sort of a diversion with me, perhaps. But it seems to me that your industry needs, right now, more than anything else under your present

situation, organization. And it is with that thought in mind that for two or three years I have been associated with bee-keeping organizations. What I have to say this morning I have committed to writing, not because I have not been accustomed to speaking without manuscript, but because I have thought by reading from the written or printed page I could more definitely and more concisely say to you what I have in mind.

Organization is the watch-word and the slogan of the time. All industries are organized for more efficiency and greater production. All of those employed in industries are organized to safeguard the rights and interests of the members. Those who employ are organized to watch over the interests of those who have made investments or who control production. Even the farmer for long years negligent of his interests, for long years furnishing the material at less than cost for the profit of the rest of mankind, is beginning to realize slowly but surely, that organization is essential for him, or agriculture must cease.

With organization dominating, all industry, all commerce, and all social activity, is it not logical that bee-keepers should be organized, and if they are to be organized as seems the irresistable answer to the query, what shall be the purposes and aims of the organization, what shall be its methods and in what manner shall it be constituted?

The purposes, business and methods of this organization, and the way it is constituted must appeal to all classes of bee-keepers, and here as I will show a little later is the difficulty with the proposition. All these classes must feel that the organization gives them the worth of the money and more than they pay to it in dues. If our plan does not appeal to all classes of bee-keepers, and if all classes do not feel that they can be certain of getting the worth of their money from membership in the organization they will not join. As I said a moment ago the difficulty heretofore with all the organizations that have been attempted has been that their methods and their purposes did not appeal to all classes of bee-keepers.

Roughly speaking we have two classes of bee-keepers. One, and this of course is by all means the most numerous class, are those who are engaged in agriculture in a small way as an experiment or diversion, keeping a few colonies in the attic or in their back yard. Very many of these are kept on the let-alone plan. Their owners have very little information as to bee behavior, no experience or knowledge in manipulation, and many of them have no disposition to study books and current literature or inform themselves as to the way to answer problems which arise. There are many in this class also who spasmodically take an interest in learning something about bees either because their bees have wintered poorly, have produced an unusually large quantity of honey or have been wiped out by disease. Many more of this number really desire to learn the habits and characteristics of bees. These subscribe for magazines, buy books and attend bee meetings.

The other class is composed of those bee-keepers who either are or design to be producers of honey commercially who from experience or study are familiar with bee behavior, and understand and practice the various manipulations for winter care, swarm control, disease,

eradication and the like. This latter class has a great financial interest in association. They would associate for the purpose of discussing the larger problems of bee-keeping and of marketing and of prices. The first class which I mentioned would be mainly interested in the problems which this latter class have already thoroughly informed themselves upon either from study or experience.

The objects of an association would be either social, educational or commercial, or the union of all three. As I have indicated, certain classes of bee-keepers, these mainly beginners and back lotters, would be interested in the educational and social features only, and would have but slight interest in the commercial features. On the other hand those who are in bee-keeping as a business would care much less for the social and educational features and much more for the working out of methods of marketing, advertising and the like. Generally speaking, also it would seem to me that the great weakness in our organizations up to date has been that they have sought to bring into the same association to participate in the same Convention these two classes of bee-keepers, and an effort has been made in the same program to furnish profitable entertainment for both. The result has been that neither class has been satisfied, and associations have dwindled as a consequence. It seems to me, therefore, we must start with the axiom that the association must be organized so as to separate the two classes, and at the same time give them both that service which warrants their membership. So in considering the method by which bee-keepers might be organized, I have kept in mind these fundamental principles, first, that the objects to appeal to all must be social, educational and commercial; second, that the meetings must be so arranged as to cause a natural classification, and to furnish to the class naturally present at a given convention the sort of a program which that class particularly is interested in. To accomplish this object I propose that all American Bee-keepers shall be associated in the American Bee-Keepers' Association intending thereby to bring together all of the English speaking bee-keepers in North America, and this of course obviously includes the United States and the Island posessions and British North America. There is a natural reason for ignoring the political subdivisions of the territory involved as there is a community of interest, and associations obviously should be built not along geographical lines but along natural lines. The English speaking people on the North American continent are alike in ancestry, in language, manners, customs, laws and politics, and all North American bee-keepers have similar commercial and education problems. Our Canadian friends have heretofore given us very largely of their assistance and experience. I need only mention Holterman, Pettit and Byer for you to readily respond that the affiliation with the Canadian bee-keepers would be of mutual advantage.

Starting then with an organization including the bee-keepers of the English speaking peoples of the North American Continent including all of them, small and great, I would propose a central organization corresponding roughly with the present National Association made up of deputies elected by the District Associations, hereafter spoken, of called a senate. This organization would have meetings at stated times at a certain particular place; the expenses and the time

in attending those meetings would be met from the treasury of the Association so that all sections and all interests could be represented without burdening any one. This Senate would concern itself entirely with commerce and business problems and the administration of the affairs of the Association. Its meetings would be entirely devoted to the discussion and settlement of questions of policy, of the conduct of the businesss of the association, of political matters, the passage of laws, the protection of interests of bee-keepers as a class against thieves, charlatans, commercial pirates and unjust discriminative legislation. It would not need to discuss or devote any part of its time to the discussion of educational or academic matters, or the practical problems of bee-keeping. It would not be concerned with the production of bees or honey, but rather with the protection of the producer and the marketing of the product whether it be bees wax or honey.

I would then divide the territory under the jurisdiction of this Association into a number of divisions without reference to state lines or other geographical sub-divisions. I would base this division of territory entirely upon a community of interest growing out of identical marketing problems, harvesting problems, wintering problems and the like, and I would hold conventions to which any member might go once or twice a year at some central point in the division. It might be that two or more states or provinces could well be brought into one such division. The Chicago Northwestern shows what can be done by making a division of this kind. Obviously the meetings of these divisional conventions would not attract the beginner and the back lotter except .to a small extent because the expense of traveling and attendance would be too great, but would attract the commercial bee-keeper with large problems, and its meetings while they would be social, educational and commercial would deal entirely with the class of questions which would interest and absorb the attention of the class of men and women who would attend such meetings. These divisions at their annual conventions would also elect two deputies for each division who would represent the division in the Association Senate. They could also have a president, secretary and treasurer and staff of officers.

Within these grand divisions I would organize locals holding meetings once, twice or oftener a year, composed of groups of bee-keepers who could conveniently meet at some common center going there from one or more counties, parishes or districts without reference to political lines, but designing to serve the community of interest concerned in similar problems. These locals should also have a staff of officers. The Treasurer should collect the dues for the Association and report them at convenient intervals to the treasurer of the American Association.

Obviously the locals would reach the bee-keepers with the small number of colonies and their meetings would be concerned mainly with the discussions of the problems which confront beginners and those who are engaged in bee-keeping on a small scale. The Central Organization should be in a position to furnish them with speakers either directly or thorugh Government and state extension services so that at each meeting some one would be there who could answer the ques-

tions that would arise and give the members a good day or half day's instruction as conditions might arise. These locals might be grouped for a short course or institute in bee-keeping which would occupy a number of days as it might be thought best.

The financial affairs of the Association should be administered entirely from the Central Body. This Central Body should furnish speakers and organizers for the District Conventions and for the Local meetings. These of course could be so arranged that the same company of speakers might pass from one to the other and appear at a large number of meetings in the same month or year. The entire fiscal management should be in the hands of the Central Organization. To this Central Organization dues should be reported and transmitted and from the treasury of this Central Organization the entire expenses of handling the Association should be run. The American Association should have a paid general manager who should devote substantially all of his time to looking after the affairs of the Association and in organization work.

Obviously this idea calls for a considerably larger amount of funds than has been for some years at the disposal of the bee-keeping associations, and I fancy you are asking already, how much dues ought to be paid. Now we readily appreciate in dealing with this proposition that it is a delicate situation. Dues must not be placed so high as to keep members out, at the same time they must not be placed so low as not to afford adequate funds for carrying out the objects of the Association. If these objects are not attained the members cannot receive the worth of their money. I believe the fairest way to provide for dues would be upon the basis of the number of colonies kept by the member with a minimum fee of a dollar, and the member should pay fifty cents more for every ten colonies or major fraction thereof owned by him. Of course this means that the commercial bee-keeper would pay much more than the back lotter or the beginner. I have heard eminent bee-keepers say that they believed this unfair because they thought the beginner gained more by way of instruction from the Association than the commercial bee-keeper did. The truth of this statement cannot be controverted if the only purpose of the Association is to educate bee-keepers, and if that were the purpose of the organization which I propose, clearly much of the machinery outlined heretofore could very well be dispensed with, but I believe if the Association has a license to exist it must of necessity be of much more worth to the commercial bee-keeper. There is no limit upon its activities for his interest, and a very small part of its program of work would be purely educational to the beginner or the keeper of a few bees. I think it would be recognized that if it is to do more ambitious things than to educate beginners in bee-keeping it is of much more value to the commercial bee-keeper than it is to the beginner; that value could be measured by the extent to which he is engaged in the business and obviously upon the basis of the number of colonies which he owns.

I have said considerable about the activities, the objects and purposes of the Association. With reference to these, aside from what has already been outlined some suggestions might be made. The

proceedings of the grand divisions should be stenographically reported the papers read and speeches made should be printed and each member should have a copy. With these the other proceedings after being thoroughly edited should be published. The supply business, the package business, and the queen breeding business should be kept track of and sharks and charlatans gently but firmly eliminated. Legal proceedings in matters involving bee-keeping as a business should be taken care of and the members protected. A fund should be set aside to protect out yards from robbers by offering rewards or employing detectives where necessary for that purpose. A fire insurance plan could well be added. General advertising of honey by scientific advertising in magazines circulating among the people who would be customers in order to keep the market we now have would be quite an important activity. In short there are a hundred things that such an organization devoting its entire energy to the business end of bee-keeping could well undertake to the profit of bee-keepers as a class. Particularly when the authority and the finances are centralized so that responsibility is not scattered. The organization of this Central Governing Body should be precisely that of a great business corporation with interests and activities nation wide. The bee-keeping industry is a great business, it has for its object the utilization of a great natural resource, and bee-keepers should recognize this and take their place among the other producers of the country. All of these have their associations or have pooled their efforts in one great corporation caring for their interests. Why do we hesitate to do what common intelligence says is for our best interests and in fact is necessary for the preservation and continuance of our business.

DR. MILLER REFERS TO McEVOY TREATMENT.

Dr. C. C. Miller.—I wish I knew something that none of the rest of you knew (laughter); I would like to tell you something worth your hearing. I expected something like this, I am just so conceited, and I was thinking what I wanted to talk about, and I wanted to say something that I thought might be of use, I would like to be of use in the world as long as I am in it, and I think I know one thing that perhaps you know about, but you haven't thought about it as much as you ought to, and that is one plan of treating foul brood, American foul brood. Nothing new, and yet I venture to say that there are some here who have not thought enough about it to really know that there is such a thing as that particular plan of treatment. I refer to the plan of treatment in the fall, after brood-rearing is all over. It comes from Canada—who is that man over in Canada that had a good deal to do with foul brood? McEvoy, yes, that is the name. William McEvoy quietly during the last years of his life recommended that when brood-rearing was over, then the combs should be all taken away from a diseased colony and it should be supplied with sealed combs of honey, give it wholesome honey, and then you would have the full treatment, just as good as you would have to take it in the time when the hives are full of brood, and you would have no loss of anything except the loss of the combs, that you must have in any case.

Now I would like to know why that thing has not had the attention that it seems to me it deserves. Do any of you know any objection to it? I would rather hear you talk about it, if there is any objection to it. What have you Canadian fellows against it?

MR. KRAUSE.—Nothing whatever, only I would just like to add one little thing, if you just put an empty comb by the side of those full combs when you put them in there and then take it out the next day you have got a complete cure, there is no danger whatever.

MR. LEONARD.—Mr. Chairman, that is the system that I have practiced myself this year, and I think if a bee-keeper looks to the strength of his colony, contracts the entrance and sees that the colony is strong so that there can be no robbing at any time during the summer, that that is the very best system of treating foul brood that there is. But there is that one difficulty of possibly leaving that all summer with foul brood in and other bees in some way getting at that honey, robbing it out. That is the only thing I see against it. I watched myself all summer and I saw that those bees were strong in those colonies that had foul brood, and then I did just exactly what you have said.

DR. MILLER.—That is a legitimate objection, only there is this point to it, a wide-awake bee-keeper will find the disease in his hive before they are at that stage when there will be any great deal of danger of getting out into the others.

A MEMBER.—That is where we fall down.

DR. MILLER.—Well, there are in the different states men who are making these things known. Now, as to that matter of putting a comb in for them to put their honey in and then taking away that, I don't see any objection to that except the trouble of it, but I don't see any use in it. Do you know then when you have taken a colony and given it the frames of honey, do you know that the disease has got in afterwards without that empty frame?

MR. KRAUSE.—It is so hard to get combs of honey that are absolutely solid. You will find empty cells up in the top corners, and very often they will store honey in those top corners and seal it up.

DR. MILLER.—You don't understand my point. I am raising the question whether there is any objection to the room in there, if they have enough honey there to last them through. My idea is that you are not afraid of the honey being in there.

MR. KRAUSE.—They will put the honey in those corner cells and seal it.

DR. MILLER.—No, they won't seal it. At any rate, that plan has succeeded. There is no loss of brood, there is no loss of bees by it. Now I remember—here is another thing. I remember Dr. Phillips was in my place one time and I said to him: "Dr. Phillips, there is a colony that has American foul brood, and I have given it an upper story of its own honey. What will happen?" "Oh, it will have the disease next year," he said. It did not. I had one other the same way, and that did not have it. That is the reason Dr. Phillips is down on me. (Laughter.)

MR. WHEELER.—I think, Dr. Miller, that the bees will consume all the uncapped honey in the fall the first thing, and none will be left in the spring.

MR. LEONARD.—I think, Dr. Miller, that Dr. Phillips is down on you also because you jacked him up for smoking.

DR. MILLER.—Well, that is a thing in the future. We have done with booze. (Applause.) That reminds me of a picture in the paper I saw the other day. A pipe and a cigar and a cigarette were bundled up together, and some reformers were out there, and they were saying "They are looking at us," they were looking at the tobacco question. Now in two or three years they will be turning to that.

But now to come back to foul brood, a more pleasant subject. (laughter and applause.) I do want to have you give that thing the consideration I believe it deserves. I believe that that sort of treatment will be a saving of thousands of dollars over the plan of taking away all the brood when the brood is in full play. Now that is all I want to take your time for. (Applause.)

MARKET INFORMATION ON HONEY FURNISHED BY THE BUREAU OF MARKETS.

(By W. H. Hall.)

Mr. Chairman, Ladies and Gentlemen: When Mr. Markham some months ago wrote to the Bureau of Markets asking that someone from this Bureau address the meeting on our methods of gathering and marketing, or rather gathering market news and information, I was just a little at a loss to know how to answer him, first because our work consists mainly of the gathering and disseminating of price information on fruits and vegetables. We have never done very much with the honey price information, that is, we had not done much on that subject up to about a year ago.

I think we all perhaps realize fully the benefits that are derived from the gathering of all possible information on the market before we market our crop. I happen to have been raised on a farm myself, and I can well remember the time when it would have meant dollars and cents to my people, had we possessed more information relative to the various markets to which we had access.

I would like first to tell you a little something of the history of the market news work as conducted by the Bureau of Markets. This idea was conceived and put into operation by two or three men at Washington, all of whom still work in the Bureau, and at the beginning the work of course was necessarily a little crude, and was very small in comparison with the work as it is being carried on to-day. It consisted first of the establishment of what is known as market stations, that is, stations in the large consuming cities, of a very few large cities, such as Chicago, New York, Pittsburg, Philadelphia, San Francisco. A market reporter was stationed in each of those cities, who covered the market products each morning and gathered the price information on the various products, fruits and vegetables, and from the railroads obtained a statement of the total carlot receipts for that particular day, and wired this information to Washington very early that morn-

ing, usually between eight and nine o'clock. This information was distributed by Washington to all of the other various stations. For instance, the report from New York was sent to Chicago, Pittsburg, and all the other cities in which a market station was maintained. That was done by the ordinary, commercial wires all over the country, that is, over the Western Union or the Postal, and it naturally entailed a great expense to the government, but after the war came on it was a relatively easy matter to secure additional funds. I would roughly make the statement that money was just thrown at the heads of the agricultureal department. Congress said, in effect, "Here is the money. Take it and do whatever you can with it, so long as you can stimulate production and conservation of food." That was their one great aim, the conservation of food and the stimulation of production. The work grew by leaps and bounds. The producer and the dealer apparently were much pleased with the service, and stations were opened in additional cities until to-day there are stations maintained in every large city in the United States and the Government has now in operation a leased wire system of about fifteen thousand miles, which is the largest leased wiring system operated by any concern or organization outside of the Associated Press.

By this leased wiring system it is possible for Chicago to know by nine o'clock each morning what produce is selling for in every large city in the United States, including the western cities, the north central cities, and the eastern cities, and these wires are all lumped together. The information on the Chicago market is sent to Washington, New York picks it up, and if you are a grower in the vicinity of New York or a dealer in New York City you will know that day what each kind of produce is selling for in the United States.

I might state at this time we also maintain what is called field stations, that is stations in the producing areas. In California, I will speak of California from the standpoint of honey. We have two field stations there, one at San Francisco and one at Los Angeles. Those field stations show what dealers are paying for honey or any other commodity f. o. b. that particular point. That information is valuable primarily to the man in the city, so that on any one particular day or the day following, the dealer and the producer knows what a commodity is selling for in the producing section; he also knows what a commodity is selling for in the consuming markets. In addition to that, he knows the supplies on each of the particular markets. For instance, this morning in Chicago we had the employees in our office get in touch with all railroads coming into Chicago and give us a report of receipts of all commodities on which we are now issuing reports, including honey, so that this information is also included with the market news information relative to prices that are sent to all of the various market centers.

I am explaining the method of obtaining this information, because of the fact that I believe it is somewhat of interest to you in that I believe a great many of you are receiving our market news bulletins. I can assume that from some of the letters I have received it has been indicated that the writer is wondering how this information has been

obtained. They can't understand how we can report prices in Chicago for all the cities of the United States for that particular day.

The honey industry, as I said, has not been thoroughly developed, that is, the price phase of it, because in the Bureau of Markets, as it is called, I believe that we have not had the facilities for carrying that out in its entirety like we have the fruit and vegetable business. We have done the best we could with the facilities we have had at our command, and we believe from the letters we have received and from the trade, and the producers we have talked to, that we have given the people something worth while. These honey bulletins are published only semi-monthly, the first and the fifteenth of each month a honey bulletin is published, and these bulletins are not published in all the market bureau stations that are maintained. At the present time I believe bulletins are issued only at Washington, Detroit, Denver and San Francisco. I don't know how many of you may be receiving these bulletins. They are put out daily in this form (the speaker held a bulletin in his hand), showing the source of the information in the country, the total receipts on each of the various markets, together with the condition of the market and the range of prices covering the various grades of honey on the particular market. If you are not already receiving those bulletins, from my description of them I know you are in a position to judge whether that is something you want.

We have many letters coming in to us, month after month, highly praising the work we are doing, and that leads us to believe that the work is well worth while. If you are not receiving these bulletins and you desire to receive them, all that is necessary to do is to write to the Bureau of Markets at any of these cities in which the bulletins are issued, and they will be sent to you semi-monthly, absolutely free of charge.

I would also like to say in this connection, and I believe I am not betraying any confidence when I say this, that the appropriation made for the next fiscal year is more than likely to be seriously curtailed. The house committee cut the appropriation right and left. I think that is true not only with the appropriation to the Bureau of Markets but also true of the appropriations of a great many other departments. The work next year will depend largely upon the final disposition made of the appropriation by the Senate Committee. I think probably that has already been settled, but I do not know how much is available for market news work the coming year. At any rate as the matter now stands there is a chance that the appropriation will be seriously curtailed, and the work cut down. I am not attempting to say why the appropriation was cut, nor why any appropriations were cut. I do know that there was certain pressure brought to bear to try to do away with market news work. I do know that is the case not only with the market service work, but with the dairy project, with the inspection project, and in fact with all projects. I can easily see where some people might want it done away with, but the people who need the information and who want the information, if they really do need it and want it, I take it will make their wants known.

Please do not misunderstand me. I am not here lobbying for any appropriation; that matter, I presume, has been settled. I merely

want to say this to you, to say that if you hear anything detrimental to the market news work, dig underneath and find out the underlying causes of the criticism.

In conclusion I would like to say that we are only your servants and do the work as we interpret your needs. If we have the funds available and you write in, suggesting that certain changes be made in the market news work, it will be given consideration. Our action and our work is entirely governed by the needs of the people as we interpret them from correspondence that we have with you, and those of you who are receiving bulletins, or those of you who are not receiving bulletins and wish to do so, you will receive them by writing us, but write to us. Don't hesitate to write and criticise our bulletins if they are not what you understand they should be. We are not in a position to judge of the realtive merits of these bulletins like you are, because you are the grower or the dealer, and you can see both sides in them, you can see faults in them that we cannot see. But write us and we will appreciate it as constructive criticism, and it will be given consideration in our future work and we will try to improve our bulletins by such criticism. It is what we need, what we want, and we will thank you for it. (Applause.)

EXTENSION BEEKEEPING: FACT OR FICTION.

(Prof. E. G. Baldwin, of Purdue University, Lafayette, Ind.)

I want to thank everybody in this audience who has taken part on the program or discussion for the inspiration I have received thus far. I have thought, in the discussion of the subject that has been alloted me for discussion, in the time that is given me, that probably you might gain a little better idea of what some of the extension men are trying to do if I brought to you a little description of the way the thing had been brought home to us, just as you have brought to us a picture of some of the problems that you have been helped to solve, and so I chose the subject that Mr. Kindig has just announced.

Friends, the last four years have brought wonderful development to us as a Nation—as individuals—our thoughts have taken a leap forward in a manner we did not dream of four years ago. The war has been like a hot house. We are standing today almost amazed at the conditions that confront us—that surround us, and we hardly know how we arrived, and whether we have arrived, we only know that we have been seized in the relentless hand of war and swept forward until to-day with an unrest as marked as it is hopeful; as has been said in this convention, doubt and unrest that permeates every branch of industry is a most hopeful sign. It was Van Dyke who said that we should be content with our surroundings but not satisfied with our attainments. It is possible to be so satisfied that you will rot in your tracks; it is possible to be so discontented that you cannot do your work. But ambition, unrest, doubt if you please is a most hopeful sign you are going forward; look at the development of the submarine and wireless and air plane. We are apt to think we are in a new world but it is only the development of the old ideas, and yet the submarine and

aeroplane all existed before the war; the war caused to develop them and carry them out to new dimensions.

So I would like to make that little comparison if I may with the extension work. Extension work, my friends, is not a new idea; it was born 25 or more years ago; university extension started at least that long ago; it was followed by agricultureal extension, and last of all bee-keeping. Perhaps the war also in this had its influence, but friends, bee-keeping extension was born before the war; born in Washington, it had a chance to try itself out in a few of the Southern states; the results were so hopeful, so encouraging, that plans were laid to carry on the work in the other states.

An S. O. S. call was received to come into Macedonia and help us and as rapidly as possible trained men were sent out in the twenty-five states. There are now sixteen men in the field trying to cover twenty-five states, twelve covering individual states, the other four still having group of states, but that is being eliminated as rapidily as possible.

And then came the war. The war liberated forces that were already being mobolized; this force perhaps would not have been liberated in a century of peace, and so war has done a wonderful thing in developing the extension idea in bee-keeping.

And so the big idea, and that is what I say extension is, has invaded your bee-keeping world; it has invaded bee culture; it is nothing less, friends, than a nation wide drive for better bee-keeping; that is all it is, a nation wide drive for better bee-keeping. But people are asking, and they have a right to ask—what does it do? In the words of the man on the street, does it bring home the bacon? I want to say right here that the whole project, friends, is too new to be judged accurately. Never judge a house while the scaffold is up is a good motto; you cannot estimate a movement, size up the cliff or the mountain as long as you are too close to it; it takes time and distance to give you the proper prospective, and so with this extension idea, I say it is too new for you to pass final judgment on it; all we can ask of you as bee-keepers is to keep in a state of suspended judgment until the thing has been thoroughly tried—and so now, in the quiet of this convention hall I have thought it might be worth while to try to get a clearer view of what this aim is; already the aim of the movement has been clearly defined, that is, not to make more bee-keepers but to make better bee-keepers.

I know the movement has been misunderstood by some, due to a failure to get the fundamental idea, but those of you who have listened to these speeches I am sure are getting that idea.

If you could go along the line and see the wretchedly poor bee-keeping on the part of men who are supposed to be up to date bee-keepers, you would say there is nothing but good that can come from the idea of holding up better bee-keeping.

Even before we commercial men there are three cardinal points in better bee-keeping that make for success or failure: Wintering—disease—control, swarm control, on these three points hang the law and the prophets. You have to hold these points up to bee-keepers whom you meet up and down the states; they get tired of it, but edu-

cation is progress. You cannot give it out as you would clothes or a pair of shoes, it is growth; it takes time to get ideas across, and extension bee-keeping is nothing more than an educational idea applied toward better bee-keeping. But I know some of you say, what is the use of talking these things—the bee bulletins have said these things and are saying them. Right there is where it lies—there is more power in the live voice—*viva voce.* A point can be brought home by the voice that no printed article can reach; if there were no merit in the living voice, what good are text books? Why not hand the text books out and say no more about it—that is all you need, go to it.

How many would be educated if you followed that practice? Extension, friends, is just that idea applied to the bee-keeping problems of to-day. It is a human trait—a weakness I recognize, but it is characteristic of all of us that we do not get the critical point, the necessary point in a written article; the point that ought to be stressed. The speaker can do it because he can put the stress where it ought to be.

I want to state two or three cases that are illustrative. A man wanted to build a bee cellar after a model that had been described in detail; he read the description carefully, and then he built his cellar, and when he got through, he had missed the essential point in the whole article; when he took the writer to task for it, the writer showed him the point he had missed. The man remarked, "But you shoved it off in a side corner where I didn't notice it."

A bee-keeper in Northern Indiana had made what he supposed was a model packing case. He had also after packing the bottom and top and side, inserted a thermometer, at which he looked almost daily and was surprised to find the temperature only a few degrees higher than outside air. He sent for an extension man. Sure enough this was true; then he was asked to open the case so the packing could be seen, and it was then apparent what the trouble was; he had used coarse forest leaves, this year's gathering; when the extension man pressed the packing down, it went almost half way down; the advice given was to take out that packing, put in proper fine insulating material, saw dust or something of that kind; he did so and after a cold spell in January he wrote that the temperature stood 47 to 57. And he said, "Why could I have not seen that thing without your having to come up here to tell me about it?" After telling some one about swarm control he said to me: "I am so glad you told us that; I have read that many times in bee journals, but somehow I never seemed to get the thing quite clear in my mind; you told us the reason for every step as you went along; now I see it."

Such statements as these are not uncommon, and this encourages the field man who is endeavoring to do his best.

Then again, a printed article oftentimes is biased, unconsciously perhaps on the part of the writer, but there is prejudice in it, and the article takes the side of trying to prove the point the writter has laid down, so that the reader does not do his own thinking.

The field man, if he is doing his duty, will not be a slave to any one method. Unthinking bee-keepers are all too common; they never get into the class of the best bee-keepers, and seldom the better bee-keepers—so the field man has got to try to help his hearer to be broad

gauged, to get out of a rut, not to be narrow or one-sided, hold their minds open to conviction.

I do not know whether bee men are any worse than other men, but it seems to me we are more apt to get into a rut.

Some field men have adopted this habit: They will not give specific methods unless they are asked to. More good will come to bee-keepers if they are taught to recognize principle.

Then of course there is the question box; every good field man uses that to the limit, and this enables not only the hearers to do some thinking, but brings home to his personal problems the theory that the field man is trying to make plain. Too much use cannot be made of this round table which I know this convention has made splendid use of this meeting; a field man cannot do it all himself that is sure; you have got to have friends follow up the work if you are going to make this permanent. Who can do this? What will make this follow up work possible? That has been answered by three or four of the topics on the program to-day.

Organization—Local organizations properly started and kept up will act as a follow up system that no field man or extension man could possibly keep up himself. A good many think you have got to have a meeting in local associations once a week or month; that is not so. If you have an organization ready to handle the problem when it comes, that is all that is necessary. If you need a drive against foul brood, box hives, etcetera, call your organization together; have them there when needed—or have some law put through.

Organization, friends, is the permanent idea that will take the weight off from the field man, will act as a spur to keep things going during his absence.

What is the reason, friends, that the present organization of county associations is more hopeful than that of 1882 (which lasted for two years and then died; '86, one year, and then died.) Is there no reason to hope that these county associations will live longer than that? There is one ground for hope—the presence on the ground of an active earnest county agent.

Those of you who have been tempted to underrate the activity of your county agent are those who underrate the activity of county organizations.

The county agent has come to stay; he is a recognized link in this chain of extension forces. One thing the extension man must do in most cases is to visit that county agent; three-fourths of the work should be with the county agent; educate your county agent so that he will train the people; you have got to educate your county agent as to the importance of bee-keeping in his community; once they realize the importance of the industry commercially as a community interest, as a local interest, you have got that county agent enlisted in a permanent drive for bee-keeping in that county.

Then again as to the merit of the extension work—you heard the testimony of Mr. Yost, the state inspector gave as to counties that had organization, they say they can do more in a week in a county that is organized than they can do in three weeks in a county in which they had to nose around and find out where the disease is and where they

were not watned. If there was no other reason for the existence of the extension work than that fact alone, that would justify its existence. The first thing the county agent does is to make a drive against the box hive; then there are other drives against foul brood, swarm control. Does that work not promote better bee-keeping? Nothing but good can come from holding before the mind of the public, steadily, better bee-keeping; this should be constantly before the bee-keeping fraternity

We have a slogan down in Indiana, "Better keep bees better or better not keep bees." The ostrich sticks its head under the sand and thinks nobody can see it because it sees nobody. A great many human species are like the feathered denizen of the desert. If a bigger field awaits you, it takes a bigger man to fill it. I once herad one of the best bee men in this country say that he wanted all the good bee men he could possible get to come into his community and start bee-keeping but, he says, they have got to be good ones. The worst menace to your community or business as a whole is the careless bee-keeper.

Extension men are trying to help you to weed out the poor bee-keeper; will you help him? Above all, don't be an ostrich!

DIXIE BEE-KEEPING.

(By Kennith Hawkins.)

Dixie land is like a prisoner before the bar, at this conference. Without a spokesman, and a defender named, who is foreign to the Southland. However, I have the bee-keeping future of Dixie at heart and while there are some things which I could say against my "client," I will instead defend her.

I am placed in the position of the elderly judge, who having been introduced as the perpetrator of certain misdeeds unmentionable, when young, arose and said in his self defense: "Gentlemen, I have only this to say in my own defense. In all my years of experience before the bar, it is always the dirtiest scoundrel in the bunch who turns state's evidence." Hence I shall speak only in defense.

In my four years of work in the extension office for bee culture of the United States Department of Agriculture, I have probably been asked more than any question, that of: "Where can I settle in a good bee location in Dixie?" My advice to the northerner going to Dixie to keep bees is to keep out until he has been south one season and knows something of the location he is going to take up. Otherwise, he may be disappointed. There are hundreds of good locations in the south for bee-keeping, some of which I should like to take up myself. I speak particularly of Louisiana, Florida, Virginia, West Virginia and Kentucky. Those who wish to locate in any one of these states should communicate with the extension division of the several state colleges of agriculture. Information can be gotten there, far more accurate than mine, on definite locations. I spent too much time on the Pullman, to know much about particular localities.

A WINTER PROBLEM.

Next, I want to emphasize that in a great portion of the South, there is a real wintering problem. In the regions of the Virginias

Maryland, Kentucky, Tennessee, Arkansas and Oklahoma, it is certain that much winter protection is needed. Just how much I do not venture to say. I believe rather heavy packing would pay, in the northern part of the states mentioned. In the other states, certainly better winter protection than is given, is needed, in many cases.

In support of the fact that there is a winter problem there and that I base my statements on facts, I present the following evidence. The critical temperature for a colony of bees, at which they begin to form a cluster and to generate heat by muscular activity and the consumption of honey, is 57 degrees. That was determined by Mr. George Demuth, working with Dr. Phillips, at the Washington Bee Culture Laboratory. That fact will be accepted without dispute, I think.

Consider then, that the weather bureau reports for an average year at Louisville, Kentucky, show that in a twelve month period, there were but sixty-two days when at some time in the day the temperature did not fall to 57 degrees F. or below, during the entire time. I do not argue that southern bee-keepers are not good bee-keepers. That would be folly. But I do argue that in the south, and for that matter, *in the north too*, there are hundreds of locations where the bee-keeper does not get the maximum yield of honey because of poor wintering. The fact that a colony of bees comes through the winter alive, is not all a sign that the colony wintered well. This is a problem to be worked out. Experiment will give the answer.

SOURCES OF HONEY.

Now as to sources of honey in the southern states. The south as a whole, including all those states south of Maryland, West Virginia, Kentucky, Arkansas and Oklahoma, may be roughly divided into three great areas. The first and northermost is a mountainous region extending from Maryland to Colorado. The second is a great alluvial region extending across the entire width of the same section, beginning in southern North Carolina, and extending across Central Georgia, Alabama, Mississippi, southeast Arkansas and most of Texas. Below this is the third region which extends in a way difficult to describe, mostly along the coast of all the states in this region and in some cases for many miles back.

In the first region, probably the three principal mountain sources of honey are basswood, tulip poplar and sour wood for the region east of the Mississippi River. Also there are, in portions of West Virginia, Virginia, Kentucky and Tennessee, great areas which must be included in the white clover belt, and which are very important sources of that honey. West of the Mississippi the sources of honey are rather indefinite so far as my knowledge goes, as in but few cases much the same honey plants prevail in portions of Arkansas and Oklahoma there are no localities where bees may be profitably kept.

In the alleuvial region extending clear across this entire territory east of the Mississippi River, probably one of the most prevalent honey plants is gallberry which yields an amber honey, as does saw wood and tulip poplar when mixed with the other flora of these regions. In some portions of this section, cotton is a source of honey, and field

peas, soja beans and similar field plants form additional important sources. Special attention must be called to the great region in part of Georgia and most all of central Alabama and Mississippi, where a great white sweet clover area exists from a natural growth. This is an exteremely valuable and safe honey producing region, which, however, is being undermined gradually by the introduction of cattle, where the sweet clover suffers as a forage crop.

GALL BERRY IMPORTANT.

In the region further south, which ranges from the lowlands along most of the coast and far back in portions of the Carolinas, Georgia, Florida and Louisiana, and into all those states which border the Mississippi River, there is a typical swamp flora which is so varied that it is impossible to describe it in so short a time, Gall berry is again an important source here, with black and white tupelo, saw and cabbage palmetto, citrus trees, and thousands of vines which are found in such a habitat, as well as a number of cultivated crops. Probably two of the best gall berry regions in the country are located in North Carolina and southern Georgia, reaching down into northern Florida.

It has been implssible to tell in so short a period of investigation, what are the most important honey sources in the swamps along the Mississippi River. Apparently there are thousands of vines, and a number of nectar producing trees which are important sources. Among these are always named the gum tree, which, however, are of so many varieties as to make it impracticable to name them.

COTTEN HONEY IS GOOD.

West of the Mississippi River, in northern and eastern Texas, is the best cotton honey area in existence on the deep sandy black loam soils. Horse mint is also an important source here and in some portions of this territory, sweet clover is also coming in, even as far up as northern Oklahoma. Southern Texas, between the Mississippi and Galveston, appears to be a rather barren bee country. Western Texas, which is subject to long periods of drouth, has several valuable and important plants. Among them are juahilla, catclaw and trees of the accacia family, particularly mesquite. All are valuable for honey and cover most of the desert portion of Texas.

This covers the subject as throoughly as is possible in so short a time. Bee-keeping is fairly well advanced in most of this territory, except in a few regions where box hives dominate. Some of the territory is devoted to the shipment of pound packages of bees, where a long spring flow builds up the colonies so that many pounds of bees may be taken away from them before the main honey flows begin, later in the season. Most of the honey produced in the south, except where swamp flowers are common, is an amber honey or lighter. Nearly all the honey of the south is a good quality and flavor, except in scattered regions where bitter weed is prevalent. Honey from this source is unpalatable, but bees will not work it when any other good honey plant is in bloom and its season is definite enough so that good bee-keepers may extract in time to prevent mixing and may use the bitter honey to feed back to the bees in the fall, for wintering purposes.

SQUARE DEAL NEEDED.

In closing, I want to make a special appeal to every bee-keeper in the United States who has any occasion to buy honey, to get him away from the idea of classing all the honey produced in Dixieland as "Southern" honey. This term is applied to honey which is equal in body, flavor and color to any produced elsewhere in the United States. This should not be, and buyers of honey in the North and elsewhere who have the welfare of Dixie bee-keeping at heart, will aid all bee-keepers of the south in seeing that this term is no longer applied, but that honeys from the south are called by their own names such as tupelo, palmetto and such terms, as are applied to white clover, alfalfa and sage honeys of the north and west.

LIST OF MEMBERS OF THE ILLINOIS STATE BEE-KEEPER'S ASSOCIATION (ALPHABETICALLY) FOR 1919.

Name and address.	No. of Colonies, 1918.	Pounds Comb Honey.	Pounds Extracted Honey.
Aikman, H. L., R. 1, Farmersville, Ill	9	300	.....
Akin, J. Logue, Oquawka, Ill	11	400	800
Akines, J. L., Girard, Ill	23	650	.....
Allen, D. H., Delavan, Ill	.....	.....	.....
Allison, J. D., R. 1, Greenview, Ill	.....	.....	.....
Allison, Labe, Elkhart, Ill	.....	.....	.....
Allspach, Elmer, Mt. Pulaski, Ill	.....	.....	.....
Anderson, H. J., Chandlerville, Ill	10	100	.....
Arnold, F. X., Deer Plain, Ill	205	800	8,000
Arrowsmith, Mrs. H. P., Gibson City, Ill	30	1,200	.....
Ashmore, F. M., Easton, Ill	.....	.....	.....
Augenstein, A. A., R. 1, Dakota, Ill	49	.....	.....
Balduff, Henry, Beardstown, Ill	70	500	1,600
Baldwin, H. I., 201 Indiana Av., Danville, Ill	.....	.....	.....
Ballinger, John, R. R., Mason City, Ill	.....	.....	.....
Banta, R. R., Oquawka, Ill	36	460	1,775
Bartlett, Ira D., East Jordan, Mich	380	.....	33,000
Barton, A. D., Mackinaw, Ill	.....	.....	.....
Bartsch, F. R., 332 W. 69th St., Chicago, Ill	.....	.....	.....
Batchilder, N. C., R. 2, Niantic, Ill	.....	.....	.....
Baxter, Dr. A. C., 1418 Holmes Av., Springfield, Ill	.....	.....	.....
Baxter, Ed. A., Pawnee, Ill	.....	.....	.....
Baxter, Emil J., Nauvoo, Ill	.....	.....	.....
Bayer, John, Hanna City, Ill	.....	.....	.....
Beaver, Wallace R., Box 425, Lincoln, Ill	38	100	800
Bechand, Louise, Fon du Lac, Wis	51	.....	4,180
Becker, H. J., R. 4, Pekin, Ill	.....	.....	.....
Bellatti, Fred. F., Mt. Pulaski, Ill	30	600	400
Bender, C. F., Newman, Ill	103	5,780	.....
Bennett, C. S., 1022 Jackson St., Charleston, Ill	12	500	.....
Bennitt, J. S., 1107 Harmon Av., Danville, Ill	.....	.....	.....
Benson, August, R. 2, Prophetstown, Ill	12	150	350
Berg, Bernhard, 1029 Seminary St., Danville, Ill	.....	.....	.....
Berry, Eugene F., Taylorville, Ill	30	1,600	100
Betzer, Jacob, R. 5, Springfield, Ill	.....	.....	.....
Biggs, O. S., San Jose, Ill	68	1,700	660
Bishop, Elmer, Virden, Ill	.....	.....	.....
Bishop, Frank, Virden, Ill	.....	.....	.....
Boehm, J. M., Litchfield, Ill	.....	.....	.....
Bowen, C. E., Lynden, Ill	125	.....	14,000
Brat, Carver, R. 5, Canton, Ill	.....	.....	.....
Brelsfoard, W. H., Kenney, Ill	32	1,656	.....
Brennemann, Albert, Hopedale, Ill	.....	.....	.....
Brennon, Matt, 725 N. Kickapoo St., Lincoln, Ill	.....	.....	.....

Name and address.	No. of Colonies, 1918.	Pounds Comb Honey.	Pounds Extracted Honey.
Brigham, Wm. B., 1108 E. Oakland Av., Bloomington, Ill			
Brown, Alfert, N. Berlin, Ill			
Brown, George E., Franklin, Ill			
Bruce, W. H., Springffield, Ill			
Bunch, J. P., Naples, Ill	45		3,000
Burrows, Charles, 810 N. McLain St., Lincoln, Ill	6	40	100
Burtle, G. H., Glenarm, Ill			
Callaway, George, Greenview, Ill			
Cameron, T. J., Lincoln, Ill	10	200	
Campbell, James S., Florence, Ill	38		
Campbell, John F., Co., 326 W. Madison St., Chicago, Ill			
Carlson, P. A., 503 S. E. 4th St., Galva, Ill	23		
Carper, U. S., Seymour, Ill			
Carrico, John G., Barnett, Ill	37	700	
Carter, George E., Pleasant Plains, Ill	5	240	96
Chapman, George, Green Valley, Ill			
Chewning, A. J., Quality Hill, Canton, Ill			
Claypool, George, Marshall, Ill	27	1,000	
Conn, Mrs. Clara May, Warshburn, Ill	5		
Cookingham, J. F., 609 Plum St., Danville, Ill	10	600	
Coppin, Aaron, Wenona, Ill	120	4,000	4,000
Mrs. Nathan Corson. Pleasant Plains, Ill			
Costello, Robert, Buffalo Hart, Ill			
Coyle, J. F., Penfield, Ill	35	500	3,600
Cravens, Albert, Farmingdale, Ill			
Crum, Fred O., Palmyra, Ill	68		200
Cunningham, J. C., Streator, Ill	14		
Dadant, L. C., Hamilton, Ill			
Davis, Chas. W., Curran, Ill	15	450	
Davis, John F., Mason City, Ill			
Davis, T. J., Pawnee, Ill			
Deem, B. L., Colona, Ill			
DeJarnett, F. J., R. 1, Beason, Ill			
Desort, Frank, 1308 Ottawa St., Lincoln, Ill	16	60	220
Dixson, M. J., Lincoln, Ill			
Dodd, W. L., Loami, Ill			
Downey, James C., Jerseyville, Ill	22	200	
Drake, Arthur L., Delavan, Ill			
Duby, H. S., St. Anne, Ill	40	2,000	
Echternach, Mrs. Henry, Marengo, Ill	18	200	
Edwards, Logan, Greenview, Ill			
Ehlert, Otto, Mt. Olive, Ill			
Eickemeyer, C. A., R. 2, Crete, Ill	1		60
Eisenbise, Ira B., Lanark, Ill	10	20	
Etienne, Alphonse. R. 2, Ottawa, Ill	3		200
Ewing, Clifford B., Neoga, Ill	9	400	
Farmer, Trueman, Rohrer, Ill	16	325	
Farrington, F. C., Wheaton, Ill	10		400
Faucett, J. M., Glencoe, Ill	18	420	940
Field, G. A., Mackinaw, Ill			
Finger, C. A., Marissa, Ill	29	200	850
Fischer, Henry F., Bensenville, Ill	19	100	785
Fiswar, J., 3660 Hillside, Cincinnati, Ohio			
Fosse, E. P., Marion, Ill			
Freitag, Theodore, New Berlin, Ill			

Name and address.	No. of Colonies, 1918.	Pounds Comb Honey.	Pounds Extracted Honey.
Frey, Jacob, R. 61, Mechanicsburg, Ill	50	1,500	500
Funk, H. W., Normal, Ill	50	.....	3,500
Fussner, Joe C., Brimfield, Ill	.....	.....	.....
Garfield, H. F., Murrayville, Ill	15	.....	.....
Gasaway, S. W., Mt. Pulaski, Ill	.....	.....	.....
George, Philip, Blandinsville, Ill	.....	.....	.....
Getz, Peter L., Tremont, Ill	.....	.....	.....
Gheen, James T., Auburn, Ill	.....	.....	.....
Gleason, J. A., 2144 S. 14th St., Springfield, Ill	.....	.....	.....
Gleich, Jacob, Nokomis, Ill	.....	.....	.....
Good, J. E., R. 2, Ashland, Ill	.....	.....	.....
Gotfreson, Charles, Sheffield, Ill	.....	.....	.....
Gray, W. H., Chillicothe, Ill	130	240	8,000
Green, J. R., Shumway, Ill	.....	.....	.....
Greer, M. W., Rushville, Ill	22	250	.....
Greffe, Dean, R. 2, Taylorville, Ill	.....	.....	.....
Guy, Arthur E., Colchester, Ill	.....	.....	.....
Haan, J. Frank, Des Plaines, Ill	21	50	600
Hackes, George, R. 3, State Farm, Lockport, Ill	.....	.....	.....
Haden, Thos. J., Jr., R. 1, Bloomington, Ill	.....	.....	.....
Haggard, C. C., Athens, Ill	.....	.....	.....
Haggard, O. C., Athens, Ill	4	150	.....
Hainline, H. M., Sciota, Ill	30	1,000	.....
Hall, C. A., Niantic, Ill	2	150	.....
Hallock, W. H., 309 W. Walnut St., Fairbury, Ill	3	500	.....
Hansel, Charley, Minooka, Ill	9	.....	.....
Harris, James D., Alhambra, Ill	.....	.....	.....
Hartman, F. A., R. 1, Assumption, Ill	.....	.....	.....
Hassinger, Edward, Jr., Greenville, Wis	250	.....	.....
Hatkins, John D., Warensburg, Ill	.....	.....	.....
Hedges, George, R. 1, Brownstown, Ill	14	200	.....
Heilman, G. A., Pekin, Ill	.....	.....	.....
Heinzel, A. O., R. 3, Lincoln, Ill	.....	.....	.....
Heith, Frank, Pekin, Ill	.....	.....	.....
Henderson, Perry, Literberry, Ill	16	.....	.....
Hendrick, Chas., R. 1, Mt. Sterling, Ill	.....	.....	.....
Hendricks, F. E., Frederick, Ill	.....	.....	.....
Hettel, Mrs. J., Marine, Ill	65	.....	700
Heyl, Ed S., Manito, Ill	.....	.....	.....
Hintz, August J., Lemont, Ill	22	.....	400
Hoes, T. Scott, Butler, Ill	18	225	.....
Holland, W. G., New Holland, Ill	.....	.....	.....
Hollowell, J. J., Farmer City, Ill	90	1,000	5,000
Horack, Charles, Streator, Ill	6	.....	950
Huebinger, H., 943 Kirkwood, Davenport, Iowa	.....	.....	.....
Hunsley, Roy, Edinburg, Ill	.....	.....	.....
Huson, Tom, Hettick, Ill	6	100	.....
Hyde, W. H., New Canton, Ill	.....	.....	.....
Irnig, O. P., Stanford, Ill	12	600	.....
Jefferies, A. E., R. 5, Springfield, Ill	11	.....	11
Johnson, M. D., Webster, Iowa	.....	.....	.....
Kellogg, W. M., New Boston, Ill	35	800	700
Kildow, A. L., Putnam, Ill	.....	.....	.....
Kinaman, Noel, Brookfield, Ill	.....	.....	.....
King, Harry L., R. 5, Springfield, Ill	.....	.....	.....

Name and address.	No. of Colonies 1918.	Pounds Comb Honey.	Pounds Extracted Honey.
King, J. O., Butler, Ill			
Kirk, William S., Farmersville, Ill			
Kirlin, Alva, Warsaw, Ill			
Klein, John, Mendota, Ill			
Koeller, W. H., New Canton, Ill	15	75	225
Komner, Elmer, Woodhull, Ill	6	300	600
Krohe, Felix, R. 2, Beardstown, Ill			
Kortz, Joseph V., 1221 N. Logan St., Lincoln, Ill			
Kruse, Chas. L., Paris, Ill	95	7,923	900
Landers, Albert, Sullivan, Ill			
Lanham, Clifton R., R. R., Cornland, Ill			
Laube, August, Atlanta, Ill			
Lawyer, D., Vermont, Ill			
Legat, Sylvester, Spring Valley, Ill			
Leib, Dr. J. E., 1231 W. Washington St., Springfield, Ill			
Lesser, F. W., East Syracuse, N. Y	1,200	1,000	66,000
Lind, M. H., Bader, Ill	60	900	2,300
Logan, N. S., 2246 S. 12th St., Springfield, Ill			
Lyons, Michael, Riverside, Ill			
Maniott, George, Hoff, Harget, Pekin, Ill			
Mann, Louis, R. C, Lincoln, Ill			
Mannahan, H. E., 449 N. 3d Av., Canton, Ill			
Marcosky, Jacob, Lincoln, Ill	50	250	250
Marten, John T., R. 5, Springfield, Ill			
Martin, C. E., Minier, Ill			
Mavis, Albert E., R. 6, Springfield, Ill			
Maxey, Miss Nannie, Farmingdale, Ill			
Meyers, Oliver G., Forreston, Ill	96	300	600
Miller, C. I., Atlanta, Ill			
Mitchell, John, R. 2, Carlyle, Ill			
Morris, B. F., St. Anne, Ill	11	500	
Mottaz, A., Utica, Ill	60	250	8,000
Munro, Brown, Peru, Ill			
McClure, J. C., Mackinaw, Ill			
McClure, J. H., Roodhouse, Ill			
McDaniels, J. E., Girard, Ill	2	165	
Nafzeger, Andrew, Hopedale, Ill			
Ness, L. L. Morris, Ill	300	2,000	30,000
Nolting, Jesse, Auburn, Ill			
Norberg, Arthur J., Spring Valley, Ill			
North, Omer, Elpaso, Ill	30		
North, W. L., R. 1, Winchester, Ill	8	100	
O'Brien, John, R. 2, Newark, Ill	132	5,200	250
O'Neill, Martin, Princeton, Ill			
Ostermeier, John, Mechanicsburg, Ill			
Pettit, Morley, Goergetown, Ontario, Canada			
Pike, E. C., 142 W. 3d St., St. Charles, Ill			
Pitner, Tom W., 30 E. Wood, Decatur, Ill			
Plattner, Theodore, R. 3, Pekin, Ill			
Poindexter, James, R. 4, Bloomington, Ill	35	80	1,600
Potter, Ben, R. 5, Lincoln, Ill			
Price, Henry, Elizabeth, Ill	46		
Rankin, Lewis T., R. 1, Athens, Ill			
Resseyn, J. F., Mason City, Ill			
Robbins, Daniel E., Payson, Ill	38	150	600

Name and address.	No. of Colonies, 1918.	Pounds Comb Honey.	Pounds Extracted Honey.
Robinson, M. A., 600 W. Adams, Abingdon, Ill	1	86	.....
Roda, Henry C., R. 8, Danville, Ill	.....	.....	.....
Rodenberg, H. J., Metorpolis, Ill	12	.....	300
Roechter, Herman, Hartsburg, Ill	.....	.....	.....
Rohrs, H., Hinsdale, Ill	.....	.....	.....
Root, A. I., Co., 215 W. Ohio St., Chicago, Ill	2	80	.....
Ross, Earl A., R. 1, Champaign, Ill	.....	.....	.....
Rothe, E. C., Kennan, Wis	7	956	513
Rule, Mrs. R. S., R. 3, Petersburg, Ill	.....	.....	.....
Rutter, A. D., Mt. Carmel, Ill	15	900	.....
Sarff, L., Pekin, Ill	.....	.....	.....
Sauer, John, R. 8, Springfield, Ill	.....	.....	.....
Schaefer, Frank, South Pekin, Ill	.....	.....	.....
Schneider, Chas. Citizens Av., Lincoln, Ill	.....	.....	.....
Scholes, Chas. A., R. 1, Edinburg, Ill	.....	.....	.....
Schoonover, H. B., Adams, Ill	18	15	800
Schrack, Peter, Pekin, Ill	.....	.....	.....
Schreiber, Dr. G. F., Chicago Heights, Ill	8	200	100
Schwinn, George, 917 Caroline St., Pekin, Ill	.....	.....	.....
Scroggin, A. C., R. 3, Mt. Pulaski, Ill	.....	.....	.....
Schaff, D. L., Shelbyville, Ill	.....	.....	.....
Sears, Frank S., Atkinson, Ill	.....	.....	.....
Seastream, George, Box 142, Pawnee, Ill	.....	.....	.....
Sedentop, D. F., Farmersville. Ill	.....	.....	.....
Shadwell, George, Flora, Ill	.....	.....	.....
Shearer, Hallock, R. 2, Mt. Carmel, Ill	40	50	500
Sherman, A. E., Seymour, Wis	103	.....	6,000
Shoaff, D. L., Shelbyville, Ill	45	945	1,845
Sieb, Albert, 209 E. Clinton St., Lincoln, Ill	9	.....	300
Sievert, F. W., Porter, Ind	.....	.....	.....
Skinner, J. W., Saum, Minn	.....	.....	.....
Sly, Miss Addie, Birmingham, Mich	.....	.....	.....
Smith, B., Tuscola, Ill	55	1,500	100
Smith, C. O., 1604 E. 55th St., Chicago, Ill	.....	.....	.....
Smith, W. H., 102 N. State, Danville, Ill	.....	.....	.....
Snell, F. A., Milledgeville, Ill	30	.....	3,000
Soderberg, Alford, R. 1, Manlius, Ill	14	1,100	110
Spiers, Alex, R. 24, LaSalle, Ill	.....	.....	.....
Spille, Mrs. Emma, Oakford, Ill	14	240	.....
Starky, J. A., Lincoln, Ill	.....	.....	.....
Sinthous, A. B., R. 6, Lincoln, Ill	.....	.....	.....
Stewart, W. G., Paris, Ill	.....	.....	.....
Stolts, J. P., 306 Walnut St., Aurora, Ill	7	.....	.....
Stone, Jas. A., Farmingdale, Ill	30	700	.....
Stover, Jas. D., 1215 N. 10th St., Springfield, Ill	.....	.....	.....
Stumm, W. H., R. 3, Edinburg, Ill	24	700	1,100
Sturm, G. J., Macomb, Ill	4	.....	200
Stutt, Alfred, Lincoln, Ill	.....	.....	.....
Swartz, Mrs. Mary E., Wenona, Ill	.....	.....	.....
Sweasy, Orvelle, Plymouth, Ill	15	300	200
Sweet, Elton, R. 5, Springfield, Ill	.....	.....	.....
Tate, T. W., Cache, Ill	.....	.....	.....
Thomas, Arthur, Seymour, Ill	8	432	.....
Thomas, Walter, Tuscola, Ill	.....	.....	.....
Tiaden, J. C., R. 34, Peoria, Ill	.....	.....	.....

Name and address.	No. of Colonies, 1918.	Pounds Comb Honey.	Pounds Extracted Honey.
Tobin, John L., Rochester, Ill			
Trainer, Geo. R., R. 5, Springfield, Ill			
Troxell, G. W., R. 2, Lovington, Ill			
Tufts, T. A., Morrisonville, Ill			
Turley, F. G., Franklin, Ill			
Turner, W. P., Peoria Heights, Ill	22	100	200
Tyler, S. A., Emden, Ill			
Ullman, Miss Margaret, Highland Park, Ill	10	150	250
Balerins, Charles, Elkville, Ill			
Van Butsele, Louis, Collinsville, Ill			
Van De Wiel, Anton, R. 1, East Dubuque, Ill			
Van Drehle, Wm., R. 3, Lincoln, Ill			
Vaughn, M. M., Latham, Ill	4	100	
Vaupel, John, R. 4, Pekin, Ill	14	300	
Volle, M., R. 4, Mt. Pulaski, Ill			
Wachter, Martin, Hinsdale, Ill	60	200	1,800
Wade, Thomas, Florence, Ill			
Waeltz, Louis, Marissa, Ill	70		2,520
Wanner, Otto, R. 5, Peoria, Ill			
Warber, Rev. C., Alhambra, Ill	10	100	300
Ward, J. H., Owaneco, Ill			
Warner, John L., Forest City, Ill			
Westlake, G. A., Kaneville, Ill	5	300	
White, C. E., Serena, Ill	33	150	
Whiting, J. H., 166 W. Chestnut St., Canton, Ill			
Whitmore, H., Box 55, Momence, Ill	25	600	200
Wiley, C. H., Harrisburg, Ill	27	48	2,300
Williams, W. H., Pekin, Ill			
Wistlake, G. A., Kaneville, Ill			
Withrow, G. M., Mechanicsburg, Ill			
Wittlich, Philip, 1218 W. Main St., Belleville, Ill	5		197
Wolfe, Rev. Austin D., Overland Park, Kans	11	275	
Wolke, Chas. S. & Son, Neoga, Ill			
Workman, John L., R. 2, Loami, Ill			
Wright, C. B., Lomo Alto, Texas			
Wright, J. A., Riverton, Ill			
Wright, Joseph, R. 5, Springfield, Ill			
Wuetig, C. J., Blue Island, Ill			
Zilligen, Geo. N., 15030 Wood St., Harvey, Ill	2	96	370

Honorary Life Members:

Dr. C. C. Miller, Marengo, Ill.
E. D. Townsend, Ed. Domestic Bee-Keeper, Northstar, Mich.
Dr. E. F. Phillips, Washington, D. C.
E. R. Root, Ed. Gleanings, Medina, Ohio.
C. P. Dadant, Ed. American Bee Journal, Hamilton, Ill.

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